SPECIFICATIONS

ITEM		
DIMENSIONS	Overall length	1,960 mm (77.2 in.)
	Overall width	830 mm (32.7 in.)
	Overall height	1,130 mm (44.5 in.)
	Wheelbase	1,280 mm (50.4 in.)
	Seat height	730 mm (28.7 in.)
	Foot peg height	180 mm (7.1 in.)
	Dry weight	124 kg (273 lbs.)
FRAME	Type	Diamond
	F. suspension, travel	Telescopic fork 115 mm (4.53 in.)
	R. suspension, travel	Swing arm 64 mm (2.53 in.)
	F. tire size, pressure	3.00-17 (4PR) 1.75 kg/cm² (25 psi)
	R. tire size, pressure	3.50—16 (4PR) 2.25 kg/cm² (32 psi)
	F. brake, lining swept area	Internal expanding shoes, 110 cm² (17.05 sq. in.)
	R. brake lining, swept area	Internal expanding shoes, 123 cm² (19.07 sq. in.)
	Fuel capacity	10.5 liters (2.8 U.S. gal.)
	Fuel reserve capacity	3.0 liters (0.8 U.S. gal.)
	Caster angle	62°
	Trail	92 mm (3.6 in.)
	Front fork oil capacity	125 cc (4.2 oz), 98 cc (3.3 oz) at draining
ENGINE	Type	Air cooled 4-stroke
	Cylinder arrangement	Parallel twin 20° inclined from vertical
	Bore and stroke	53x41 mm (2.09 x 1.61 in.)
	Displacement	181 cc (11.03cu. in.)
	Compression ratio	9.0 : 1
	Valve train	Chain drive overhead camshaft
	Maximum horsepower	15.0 BHP/9,500 rpm
	Maximum torque	1.28 kg-m (9.26 ft-lb.)/7,000 rpm
	Oil capacity	1.5 liters (1.6 U.S. qt.)
	Lubrication system	Pressure and wet sump
	Air filtration	Oiled polyurethane foam
	Cylinder compression	12.0 ± 2.0 kg/cm² (170 ± 28 psi)
	Intake valve Opens	-3° (B.T.D.C.) at 1mm lift. 45° (B.T.D.C.) at 0 lift
	Closes	34° (A.B.D.C.) at 1mm lift, 97° (A.B.D.C.) at 0 lift
	Exhaust valve Opens	33° (B.B.D.C.) at 1 mm lift, 94° (B.B.D.C.) at 0 lift
	Closes	-4° (A.T.D.C.) at 1mm lift, 49° (A.T.D.C.) at 0 lift
	Valve clearance	IN: 0.05 mm (0.002 in.)
		EX: 0.05 mm (0.002 in.)
	Idle speed	1,200 ± 100 rpm

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<table>
<tr><th colspan="2">ITEM</th><th></th></tr>
<tr><td rowspan="9">DRIVE TRAIN</td><td>Clutch</td><td>Wet, multi-plate type</td></tr>
<tr><td>Transmission</td><td>4-speed constant-mesh</td></tr>
<tr><td>Primary reduction</td><td>3.833</td></tr>
<tr><td>Gear ratio 1</td><td>2.769</td></tr>
<tr><td>Gear ratio II</td><td>1.722</td></tr>
<tr><td>Gear ratio III</td><td>1.272</td></tr>
<tr><td>Gear ratio IV</td><td>1.000</td></tr>
<tr><td>Final reduction</td><td>2.333(15/35)</td></tr>
<tr><td>Gear shift pattern</td><td>Left foot operated return system</td></tr>
<tr><td rowspan="15">ELECTRICAL</td><td>Ignition</td><td>Battery and ignition coil</td></tr>
<tr><td>Ignition timing "F" mark</td><td>15° B.T.D.C. at 1,200 rpm idle</td></tr>
<tr><td>Full advance</td><td>37-40° B.T.D.C. at 3,100 rpm</td></tr>
<tr><td>Starting system</td><td>Motor and kick starter</td></tr>
<tr><td>Generator</td><td>A.C. generator 0.08 kw/5,000 rpm</td></tr>
<tr><td>Battery capacity</td><td>6 V - 12AH</td></tr>
<tr><td>Spark plug</td><td><table>
<tr><th colspan="2">For cold climate below 5°C(41°F)</th><th colspan="2">Standard</th><th colspan="2">For extended high speed driving</th></tr>
<tr><td>ND</td><td>NGK</td><td>ND</td><td>NGK</td><td>ND</td><td>NGK</td></tr>
<tr><td>U20FS</td><td>C6H</td><td>U22FS</td><td>C7HS</td><td>U24FB</td><td>C9H</td></tr>
</table></td></tr>
<tr><td>Headlight</td><td>25/35W</td></tr>
<tr><td>Tail/stoplight</td><td>3/32 cp</td></tr>
<tr><td>Turn signal light</td><td>21 cp</td></tr>
<tr><td>Speedometer light</td><td>2 cp</td></tr>
<tr><td>Neutral indicator light</td><td>2 cp</td></tr>
<tr><td>Turn signal indicator light</td><td>1 cp</td></tr>
<tr><td>High beam indicator light</td><td>1 cp</td></tr>
</table>

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SERVICE DATA

ENGINE

mm (in.)

ITEM		STANDARD	SERVICE LIMIT
Cylinder head warpage			0.1 (0.0039)
Cylinder head height		72.75-72.85 (2.8642-2.8681)	72.6 (2.8583)
Cylinder I.D.		53.00-53.01 (2.0866-2.0870)	53.1 (2.0905)
Piston O.D.		52.960-52.990 (2.0850-2.0862)	52.86 (2.0811)
Piston pin O.D.		13.994-14.000 (0.5509-0.5512)	13.98 (0.5504)
Piston pin bore		14.002-14.008 (0.5513-0.5515)	14.05 (0.5531)
Piston ring end gap	Top/second	0.15-0.35 (0.0060-0.0138)	0.5 (0.0197)
	Oil	0.2-0.9 (0.0078-0.0354)	
Piston-to-piston ring clearance	Top/second	0.015-0.045 (0.0006-0.0018)	0.12 (0.0048)
	Oil	0.017 (0.0067)	
Valve stem O.D.	IN	5.450-5.465 (0.2146-0.2152)	5.42 (0.2134)
	EX	5.430-5.445 (0.2138-0.2144)	5.40 (0.2126)
Valve guide I.D.	IN	5.475-5.485 (0.2156-0.2159)	5.50 (0.2165)
	EX	5.475-5.485 (0.2156-0.2159)	5.50 (0.2165)
Valve spring free length	Outer	36.45 (1.4350)	35.3 (1.3898)
	Inner	29.9 (1.1772)	29.0 (1.1417)
Valve seat width	IN/EX	1.0 (0.0394)	1.5 (0.0590)
Clutch disc thickness		3.0 (0.1181)	2.6 (0.1024)
Clutch plate warpage		0-0.1 (0-0.0039)	0.2 (0.0079)
Clutch spring free length		36.2 (1.4252)	33.1 (1.3031)
Cam lift	IN	27.695 (1.0904)	26.6 (1.0472)
	EX	27.522 (1.0835)	26.5 (1.0433)
Camshaft journal O.D.		19.967-19.980 (0.7861-0.7866)	19.92 (0.7843)
Camshaft bushing I.D.		20.063-20.083 (0.7899-0.7907)	20.20 (0.7965)
Crankshaft runout			0.1 (0.0039)
Connecting rod small end I.D.		14.016-14.034 (0.5518-0.5525)	14.08 (0.5543)
Connecting rod big end side clearance		0.1-0.4 (0.0039-0.0158)	0.6 (0.0236)
Connecting rod big end radial clearance		0.004-0.012 (0.0002-0.0005)	0.05 (0.0020)
Rocker arm shaft O.D.		9.978-9.987 (0.3928-0.3932)	9.17 (0.3610)
Rocker arm I.D.		10.000-10.015 (0.3937-0.3943)	10.1 (0.3976)
Oil pump	Inner-to-outer rotor clearance	0.15 (0.0059)	0.2 (0.0079)
	Rotor-to-cover clearance	0.01-0.07 (0.0004-0.0028)	0.12 (0.0048)
	Outer rotor-to-body clearance	0.15-0.18 (0.0059-0.0071)	0.25 (0.0098)
Shift fork I.D.		12.000-12.018 (0.4724-0.4731)	12.05 (0.4744)
Shift fork guide shaft O.D.		11.976-11.994 (0.4715-0.4722)	11.96 (0.4709)
Shift fork thickness (for end thickness)		5.00-5.07 (0.1969-0.1996)	4.70 (0.1850)
Kick starter pinion gear I.D.		18.020-18.041 (0.7094-0.7103)	18.07 (0.7114)
Kick starter spindle O.D.		17.959-17.980 (0.7070-0.7079)	17.93 (0.7059)

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FRAME

mm (in.)

ITEM	STANDARD	SERVICE LIMIT
Front/rear axle bend		0.2 (0.0079)
Front brake drum I.D.	140.0 (5.5118)	141.0 (5.5512)
Rear brake drum I.D.	130.0 (5.1181)	131.0 (5.1575)
Front/rear brake lining thickness	4.0 (0.1575)	2.0 (0.0787)
Front fork spring free length	504.6(19.9)	495 (19.5)
Front fork slider I.D.	31.042-31.104 (1.2221-1.2246)	31.165 (1.2270)
Front fork tube O.D.	30.925-30.950 (1.2175-1.2185)	30.87 (1.2154)
Swing arm pivot bushing clearance	0.2-0.3 (0.0079-0.0118)	0.5 (0.0197)
Rear shock absorber spring free length	184.1 (7.2480)	175.6 (6.9133)

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TORQUE VALUES

ENGINE

TIGHTENING POINT	Q'TY	THREAD DIA (mm)	TORQUE kg-m (ft-lb.)
Crankshaft holder bolt nut	5	6	1.0-1.4(7.2-10.1)
Cylinder head nut	8	8	1.6-2.0(11.6-14.5)
Cylinder head cover bolt	2	6	0.8-1.2 (5.8-8.7)
AC generator rotor bolt	1	10	4.5-5.0 (32.5-36.2)
Orive gear bolt	1	16	4.5-6.0 132.5-43.4)
Cam sprocket bolt	2	7	1.7-2.3(12.3-16.6)

FRAME

TIGHTENING POINT	Q'TY	THREAD DIA (mm)	TORQUE kg-m (ft-lb.)
Steering stem nut	1	22	6.0-7.0 (43.4-50.6)
Fork top bridge bolt nut	2	7	2.0-2.5 (14.5-18.1)
Fork bottom bridge bolt nut	2	8	2.0-2.5 (14.5-18.1)
Handlebar holder bolt	4	8	2.0-2.5 (14.5-18.1)
Front axle nut	1	12	4.0-5.0 (28.9-36.2)
Rear axle nut	1	12	4.0-5.0 (28.9-36.2)
Engine hanger bolt nut	2	10	5.5-7.0 (39.8-50.8)
Engine hanger bolt nut	7	8	2.0-2.5 (14.5-18.1)
Rear brake torque link bolt nut	2	8	2.0-2.5 (14.5-18.1)
Shock absorber nut	4	10	3.0-4.0 (21.7-28.9)
Foot rest bolt	4	8	2.0-2.5 (14.5-18.1)
Driven sprocket bolt nut	4	10	5.5-6.5 (39.8-47.0)
Swing arm pivot bolt nut	1	12	5.0-6.0 (36.2-43.4)

Torque specifications listed above are important tightening points. Others should be torqued to standard torques below.

STANDARD TORQUES

TYPE	TORQUE kg-m (ft-lb.)	TYPE	TORQUE kg-m (ft-lb.)
5 mm bolt, nut	0.45-0.6 (3.3-4.3)	5 mm screw	0.35-0.5 (2.5-3.6)
6 mm bolt, nut	0.8-1.2 (5.8-8.7)	6 mm screw	0.7-1.1 (5.1-8.0)
8 mm bolt, nut	1.8-2.5 (13.0-18.1)	6 mm flange bolt, nut	1.0-1.4 (7.2-10.1)
10 mm bolt, nut	3.0-4.0 (21.7-28.9)	8 mm flange bolt, nut	2.4-3.0 (17.4-21.7)
12 mm bolt, nut	5.0-6.0 (36.2-43.4)	10 mm flange bolt, nut	3.0-4.0 (21.7-28.9)

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SPECIAL TOOLS

SPECIAL TOOLS

TOOL NAME	TOOL NO.	APPLICATION	REF. PAGE
6 mm Allen wrench	07917-3230000	Front fork	11-16. 11-19
Clutch outer holder	07923-1070001	Clutch'	8-3. 8-7.9-6
Ball race driver	07944-1150001	Ball race	11-22
Shock absorber spring compressor	07959-3290001	Shock absorber	1210, 12-11
Spring holder attachment	07967-1150100	Shock absorber	12-10, 12-11
Valve guide reamer	07984-0980000	Valve guide	6-10, 6-11
Piston ring compressor	07954-4190000	y Cylinder	7-10
Piston base	07958-2500000		7-10

COMMON TOOLS

TOOL NAME	TOOL NO.	APPLICATION	REF. PAGE
Pin spanner	07702-0010000	Steering top thread	11-22, 11-23
Tappet adjusting	07708-0030400	} Tappet clearance adjustment	3-4
Tappet adjusting wrench (8x9)	07708-0030100		3-4
Steering stem wrench (30x32)	07716-0020400	Steering stem nut	11-21, 11-23
Extension bar	07716-0020500	Steering stem nut	11-21. 11-23
Universal holder	07725-0010101	Drive sprocket	9-4
Rotor puller	07733-0020000	Rotor	9-7
Valve guide driver/remover (5.5)	07742-0010100		6-11
Valve guide cutter	07742-0030100	^ Valve guide	6-10. 6-11
Valve guide pilot (5.5)	07742-0030200		6-10, 6-11
Bearing driver (32x35)	07746-0010100	#6202 S	10-8
Bearing driver (42x47)	07746-0010300	#6302	11-10. 12-4
Bearing driver (52x55)	07746-0010400	#6006	10-9
Driver pilot (15)	07746-0040300	#6302 > #6202 Wheel bearing.	11-10, 12-4
Driver pilot (20)	07746-0040500	#6204 crankcase bearing	10-8
Driver pilot (35)	07746-0040800	#6006	10-9
Driver handle B	07746-0020100		10-9
Driver handle A	07749-0010000	J	11-10, 12-4
Fork seal driver body	07747-0010100	} Front fork oil seal	11-19
Driver attachment (C)	07747-0010400		11-19
Valve spring compressor	07757-0010000	Valve	6-8. 6-16
Float gauge	07401-0010000		4-6

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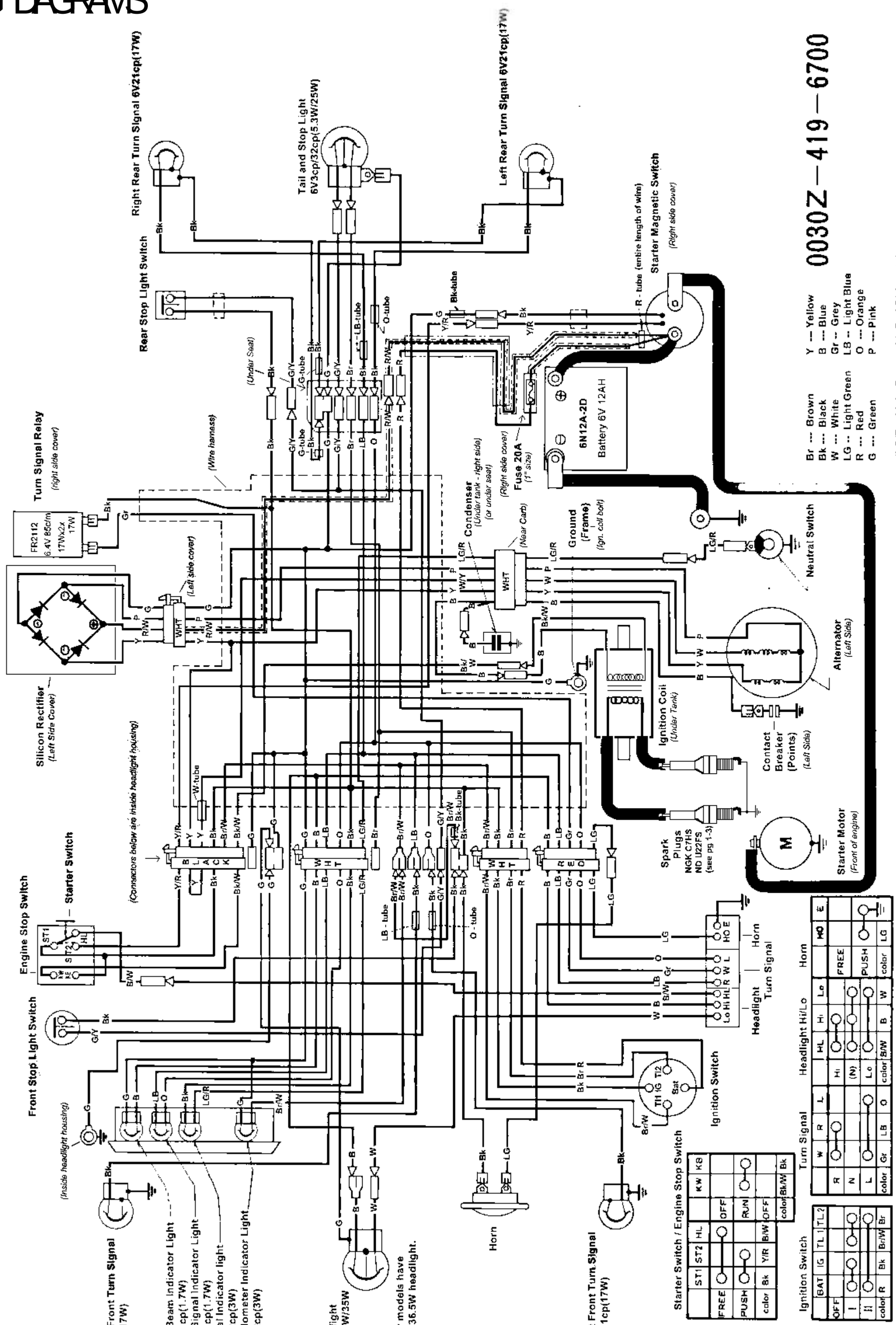
WIRING DIAGRAMS

1978-1979 Honda CM185T Twinstar


Right Rear Turn Signal 6V21cp(17W)
Tail and Stop Light 6V3cp/32cp(5.3W/25W)
Left Rear Turn Signal 6V21cp(17W)
Rear Stop Light Switch
Turn Signal Relay (right side cover)
FR2112 6.4V 85c/m 17Wx2x 17W
Silicon Rectifier (Left Side Cover)
(Left side cover)
(Wire harness)
(Under Seat)
(Connectors below are inside headlight housing)
Engine Stop Switch
Starter Switch
Front Stop Light Switch
(Inside headlight housing)
Right Front Turn Signal 6V21(17W)
High Beam Indicator Light 6V1cp(1.7W)
Turn Signal Indicator Light 6V1cp(1.7W)
Neutral Indicator light 6V2cp(3W)
Speedometer Indicator Light 6V2cp(3W)
Headlight 6V 25W/35W
Later models have 35W/36.5W headlight.
Horn
Left Front Turn Signal 6V21cp(17W)
Condenser (Under tank - right side) (or under seat)
Fuse 20A (1" size)
(Right side cover)
6N12A-2D Battery 6V 12AH
Starter Motor (Front of engine)
Ground (Frame) (Ign. coil bolt)
Neutral Switch
Alternator (Left Side)
Ignition Coil (Under Tank)
Contact Breaker (Points) (Left Side)
Spark Plugs NGK C7HS ND U22FS (see pg 1-3)
Ignition Switch
Headlight Turn Signal Horn
Starter Switch / Engine Stop Switch
Ignition Switch
Headlight Hi/Lo
Turn Signal
Horn
R - tube (entire length of wire)
Starter Motor (Right side cover)
Br --- Brown
Bk --- Black
W --- White
LG -- Light Green
R --- Red
G --- Green
Y --- Yellow
B --- Blue
Gr -- Grey
LB -- Light Blue
O --- Orange
P --- Pink
(LG/R = Light Green with Red Stripe etc)
(O-tube = Orange tube - A short piece of shrink tube used as an identifier)
003Z-419-6700

System: Chapter

Battery/Charging ------ 14
Ignition ---------- 15
Electric Starter ------ 16
Switches/Lights/Horn -- 17

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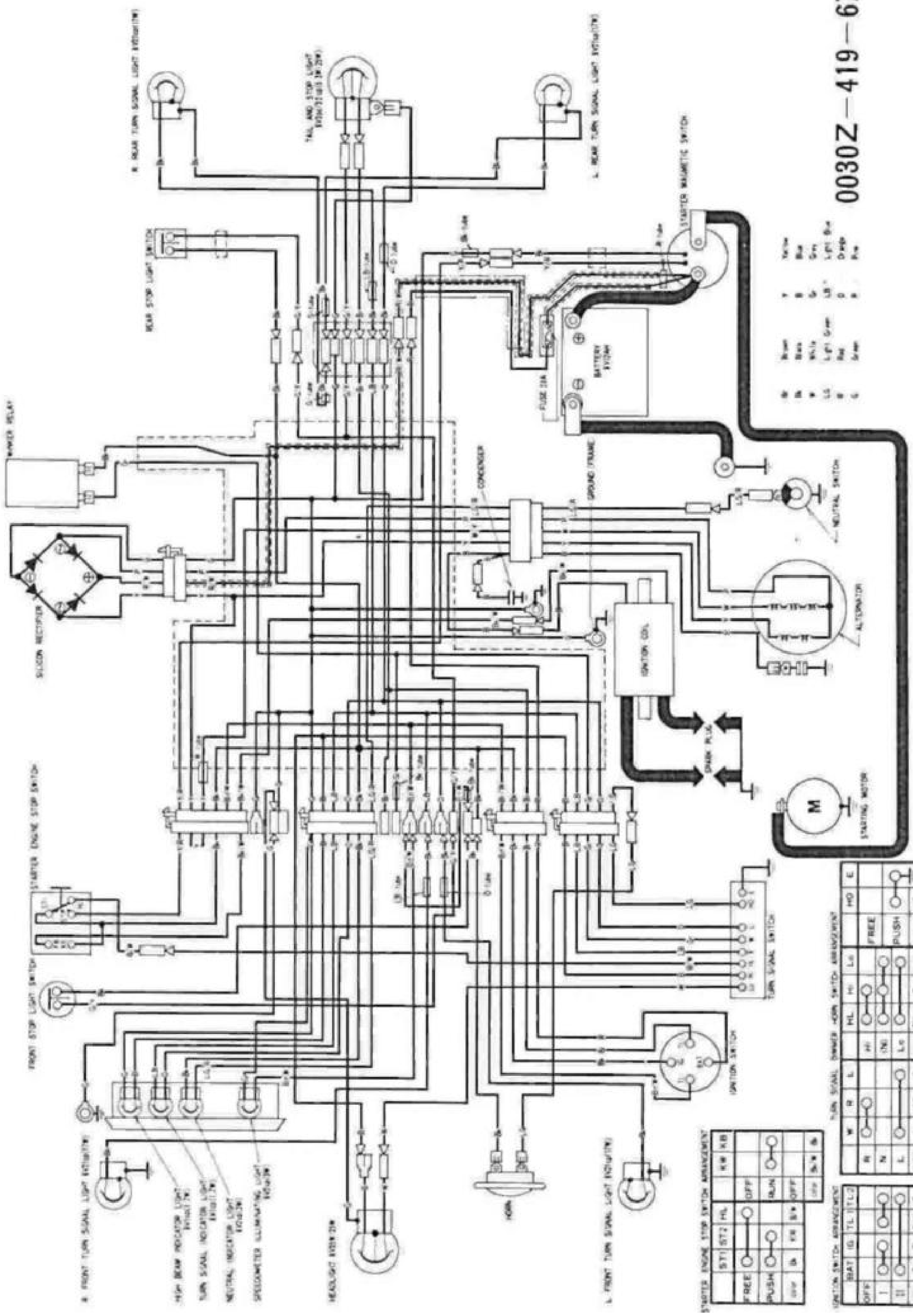
GENERAL INFORMATION



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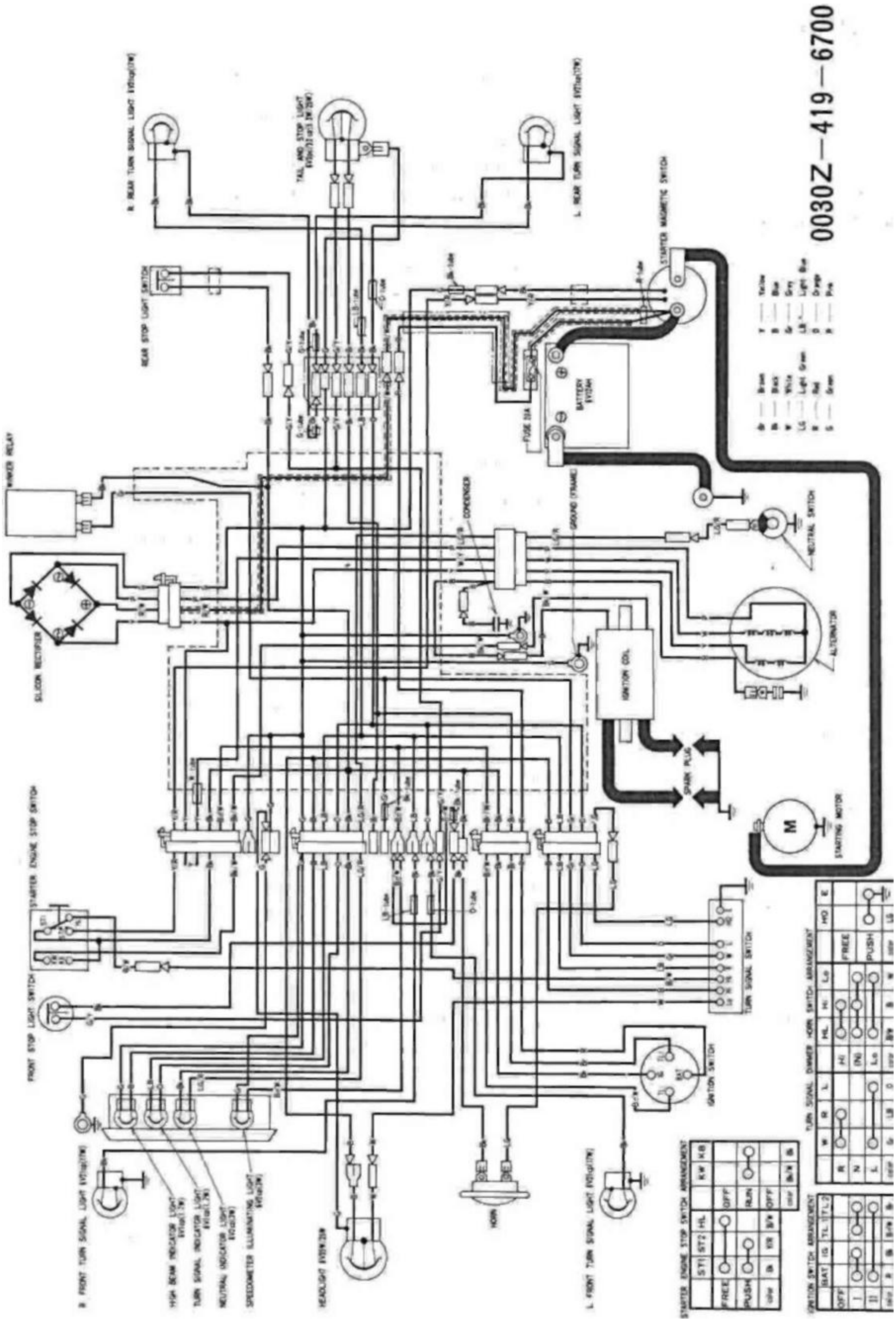
WIRING DIAGRAMS



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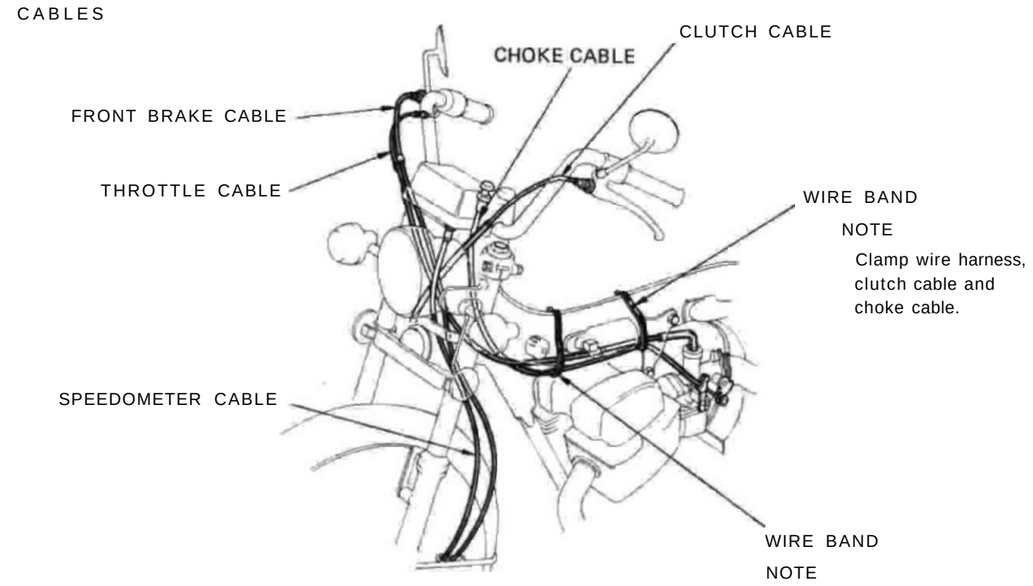
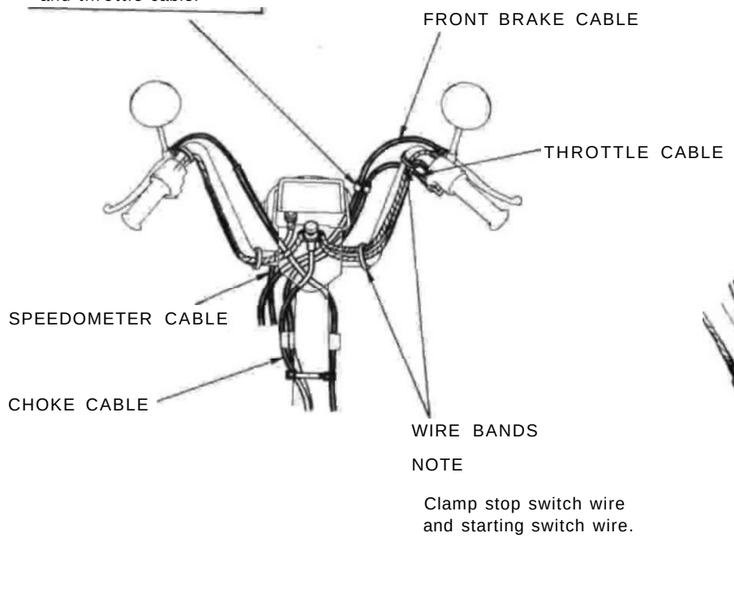
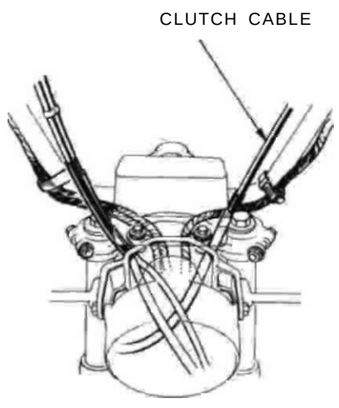
CABLE & HARNESS ROUTING

• CABLES







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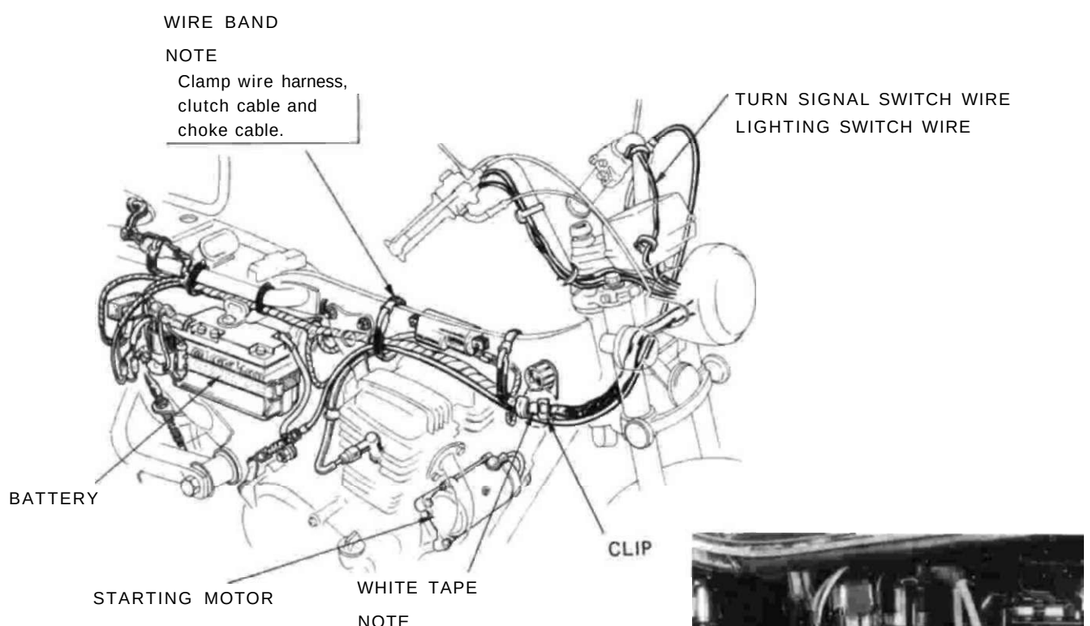
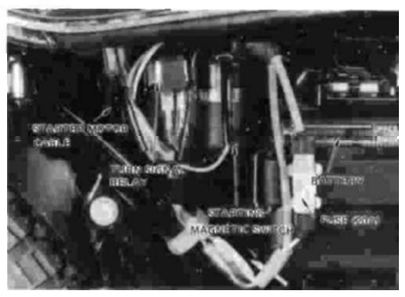
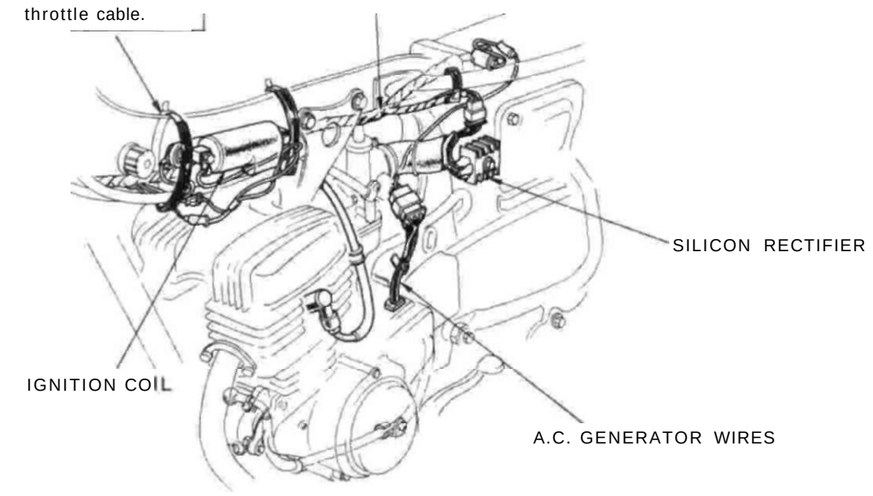
• WIRE HARNESSES







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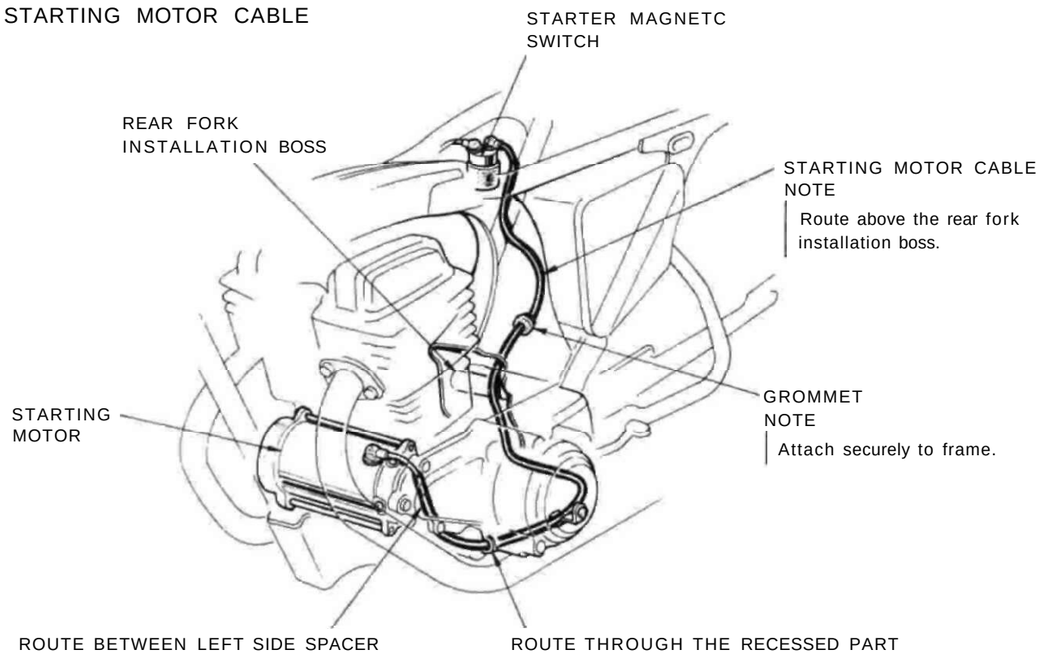
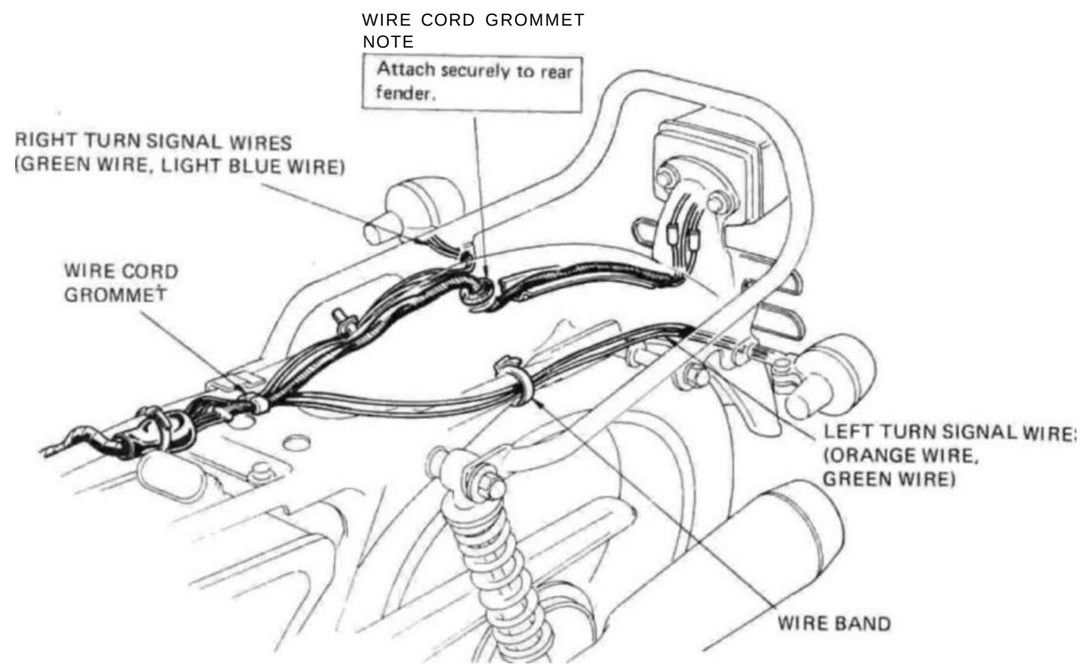
STARTING MOTOR CABLE


STARTER MAGNETC SWITCH
REAR FORK INSTALLATION BOSS
STARTING MOTOR CABLE NOTE
Route above the rear fork installation boss.
STARTING MOTOR
GROMMET NOTE
Attach securely to frame.
ROUTE BETWEEN LEFT SIDE SPACER AND STARTING MOTOR
ROUTE THROUGH THE RECESSED PART OF THE LEFT CRANKCASE COVER.

• TURN SIGNAL AND TAILLIGHT WIRES


WIRE CORD GROMMET NOTE
Attach securely to rear fender.
RIGHT TURN SIGNAL WIRES (GREEN WIRE, LIGHT BLUE WIRE)
WIRE CORD GROMMET
LEFT TURN SIGNAL WIRES (ORANGE WIRE, GREEN WIRE)
WIRE BAND

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EMISSION CONTROL SYSTEM

The CM185T is equipped with an Exhaust and Crankcase Emission Control Systems, which are effective in reducing carbon monoxide and hydrocarbon emissions.
These systems are described below.

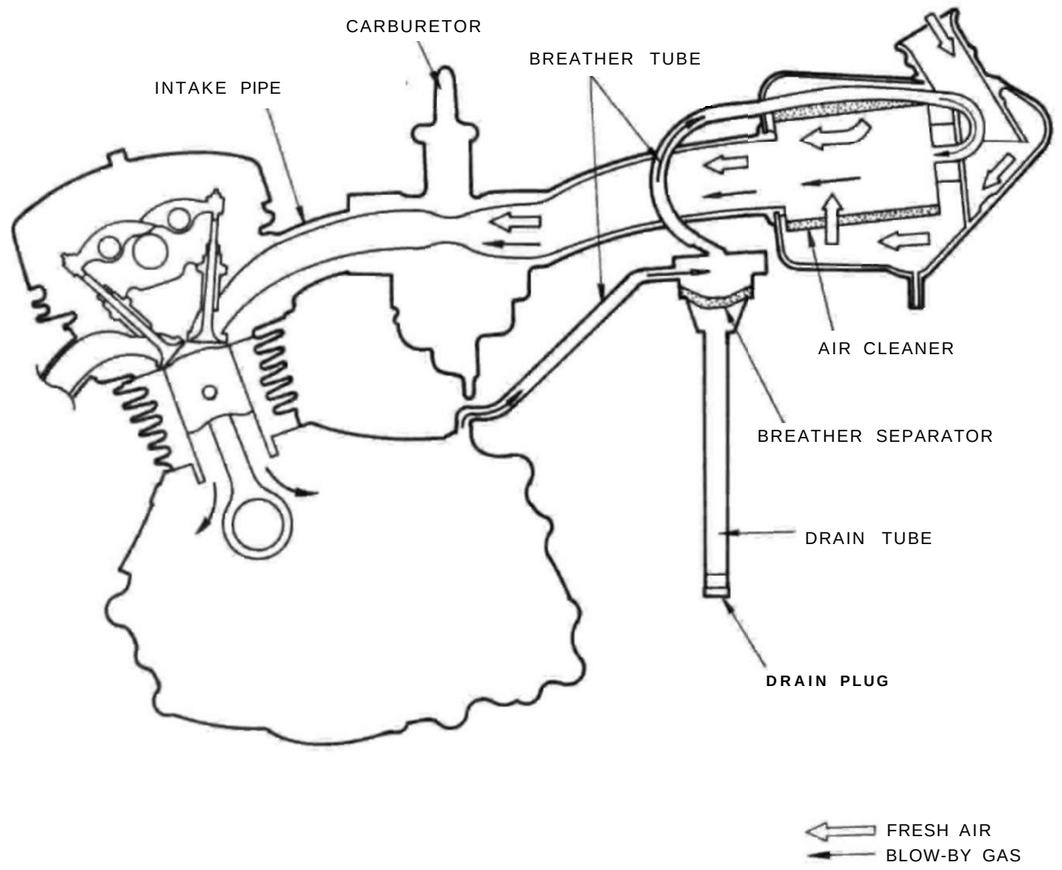
• EXHAUST EMISSION CONTROL SYSTEM

The exhaust emission control system is composed of a factory pre-set carburetor. No adjustments should be made except idle speed with the throttle stop screw.
This system is separate from the crankcase emission control system.

• CRANKCASE EMISSION CONTROL SYSTEM

Blow-by gas is returned to the combustion chamber through the breather tube, separator and intake pipe.

CRANKCASE EMISSION CONTROL SYSTEM



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MAINTENACE SCHEDULE

Perform the PRE-RIDE INSPECTION in the Owner's Manual at every maintenance period.

I: INSPECT, CLEAN, ADJUST, LUBRICATE, OR REPLACE IF NECESSARY.
C: CLEAN
R: REPLACE
A: ADJUST

		ITEM / FREQUENCY	WHICHEVER OCCURS FIRST ➡ EVERY	ODOMETER READING [NOTE (4)] 600 mi (1,000 km)	3,600 mi (6,000 km)	7,200 mi (12,000 km)	10,800 mi (18,000 km)	Refer to
EMISSION RELATED ITEMS		ENGINE OIL	YEAR	R	REPLACE EVERY 1,800 mi (3,000 km)			Page 2-2
	*	ENGINE OIL SCREEN				C		Page 2-2
		CRANKCASE BREATHER[NOTE(D]			C	C	C	Page 3-3
		AIR CLEANER [NOTE (2)]			C	C	C	Page 3-2
	*	FUEL LINES			I	I	I	Page 3-3
		SPARK PLUGS			I	R	I	Page 3-3
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** IN THE INTEREST OF SAFETY, WE RECOMMEND THESE ITEMS BE SERVICED ONLY BY AN AUTHORIZED HONDA DEALER.

* SHOULD BE SERVICED BY AN AUTHORIZED HONDA DEALER, UNLESS THE OWNER HAS PROPER TOOLS AND IS MECHANICALLY QUALIFIED.

NOTES: (1) MORE FREQUENT SERVICE MAY BE REQUIRED WHEN RIDING IN RAIN, OR AT FULL THROTTLE.
(2) MORE FREQUENT SERVICE MAY BE REQUIRED WHEN RIDING IN DUSTY AREAS.
(3) INITIAL SERVICE PERIOD 200 miles (300 km)
(4) FOR HIGHER ODOMETER READINGS, REPEAT AT THE FREQUENCY INTERVAL ESTABLISHED HERE.

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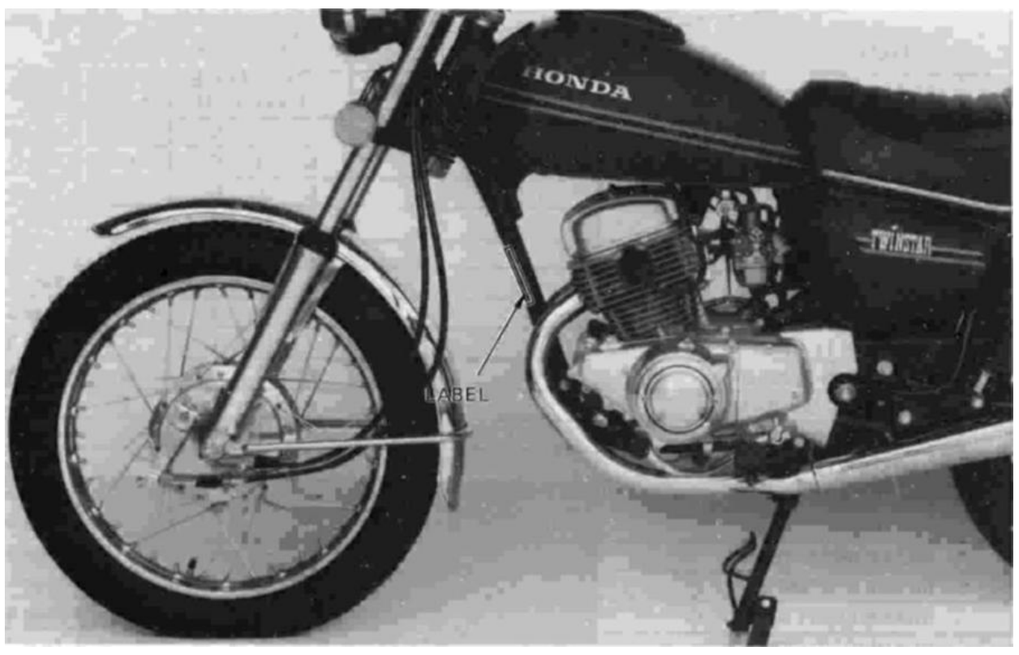
EMISSION CONTROL INFORMATION LABEL

An Emission Control Information Label is located on the CM185T'S front frame downtube. It contains basic tune-up specifications for CM185T's manufactured after December 31, 1977.



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HONDA CM185T

2. LUBRICATION

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SERVICE INFORMATION

• WORKING PRACTICE

This section describes inspection and replacement of engine oil and cleaning of the oil filter. Servicing procedure of the oil pump is described in Section 8.

SPECIFICATIONS

Oil capacity: 1.5 liter {1.6 U.S. qt.) at engine assembly
1.4 liter (1.5 U.S. qt.) at draining

Oil: HONDA 4-stroke oil or equivalent API service classification-SE

General all Temperature	SAE 10W-40
Above 15°C (59°F)	SAE 30
0°-15°C (32°-59°F)	SAE 20 or 20W
Below 0°C (32°F)	SAE 10W

Oil pump delivery: 4,900 cc/5,000 rpm

• TORQUE VALUE

Oil drain bolt: 3.0-5.0 kg-m (21.7-36.2 ft-lb.)

TROUBLESHOOTING

Oil Level Too Low
1. External oil leaks
2. Worn piston rings
3. Worn valve guide/or stem seal

Oil Contamination
1. Oil not changed often enough
2. Faulty head gasket
3. Worn piston rings

Low Oil Pressure
1. Plugged oil pick-up screen
2. Oil pump worn
3. External oil leaks
4. Oil level low

High Oil Pressure
1. Incorrect oil being used
2. Plugged oil passage

No Oil Pressure
1. Oil level too low
2. Oil pump drive gear broken
3. Faulty oil pump
4. Leaks from oil circuit

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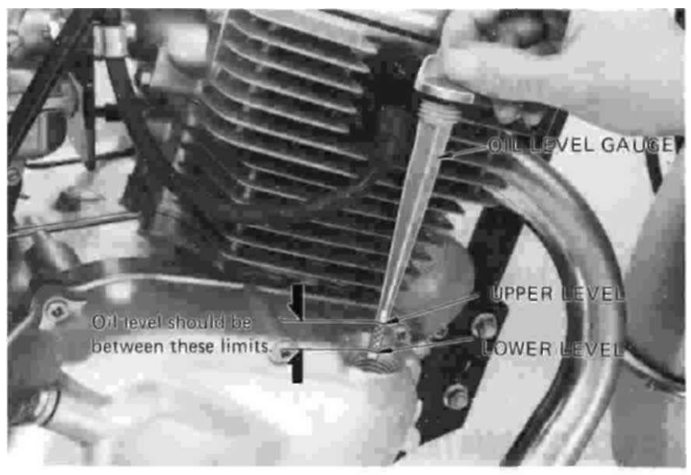
ENGINE OIL LEVEL CHECK

Support the motorcycle upright on level ground.

Check the oil level with the oil level gauge.

Do not screw in the cap when making this check.

If the oil level is below the lower level mark, fill to the upper level mark.



ENGINE OIL CHANGE

NOTE

Drain the oil while the engine is warm and the vehicle upright to assure complete draining.

Remove the oil filler cap and drain plug and drain the oil.

Operate the kick starter 2 or 3 times to completely drain any residual oil.

Reinstall the drain plug, making sure the sealing washer is in good condition.

Fill the crankcase with the recommended grade oil.

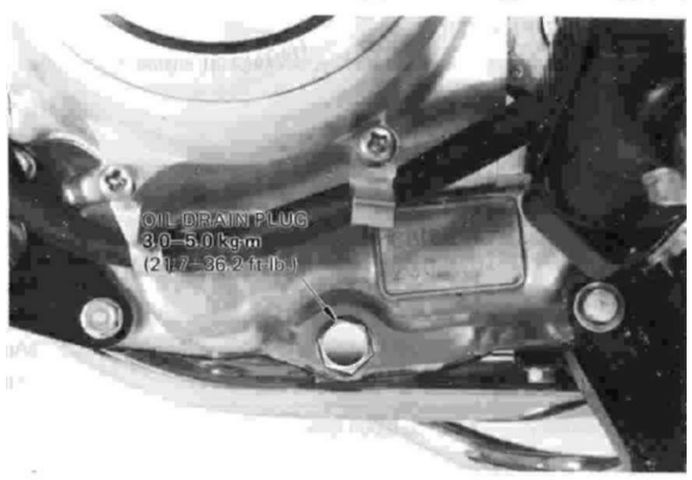
ENGINE OIL CAPACITY:

1.42 (1.5 U.S. qt) at draining

1.51! (1.6 U.S. qt.) at engine assembly

Start the engine and allow to idle for 2-3 minutes.

Stop the engine, make sure that the oil level is at the upper level mark with the vehicle in an upright position and there are no oil leaks.



OIL FILTER SCREEN CLEANING

Remove the drain plug and drain the oil.

Remove the kick starter pedal and the right muffler.

Disconnect the clutch cable from the clutch lever.

Remove the right crankcase cover.

Remove the oil filter screen with the oil pump.

Clean the oil filter screen.

Reinstall the oil filter screen with the oil pump, the right crankcase cover, the clutch cable, the right muffler and the kick starter pedal.

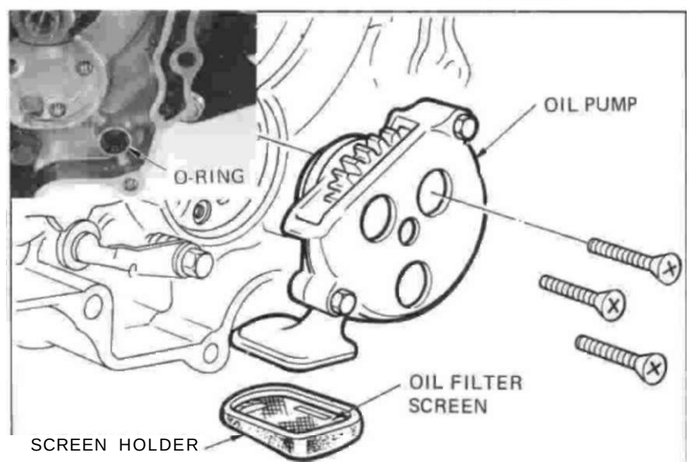
NOTE

During installation check the seating of the O-ring.

Adjust the clutch cable.

Fill the crankcase with specified engine oil, and start the engine.

Stop the engine, check the oil level and inspect for oil leaks.



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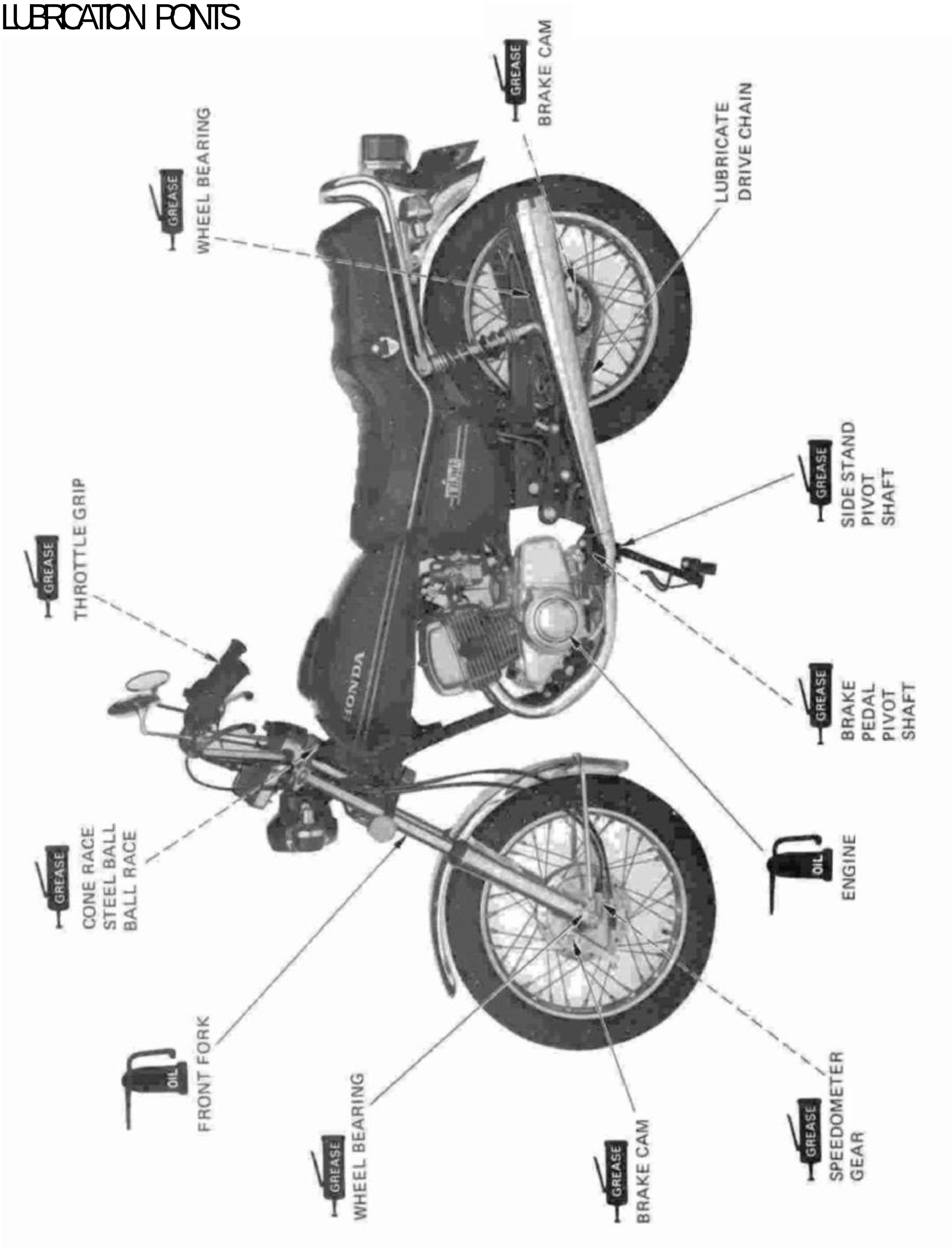
LUBRICATION POINTS



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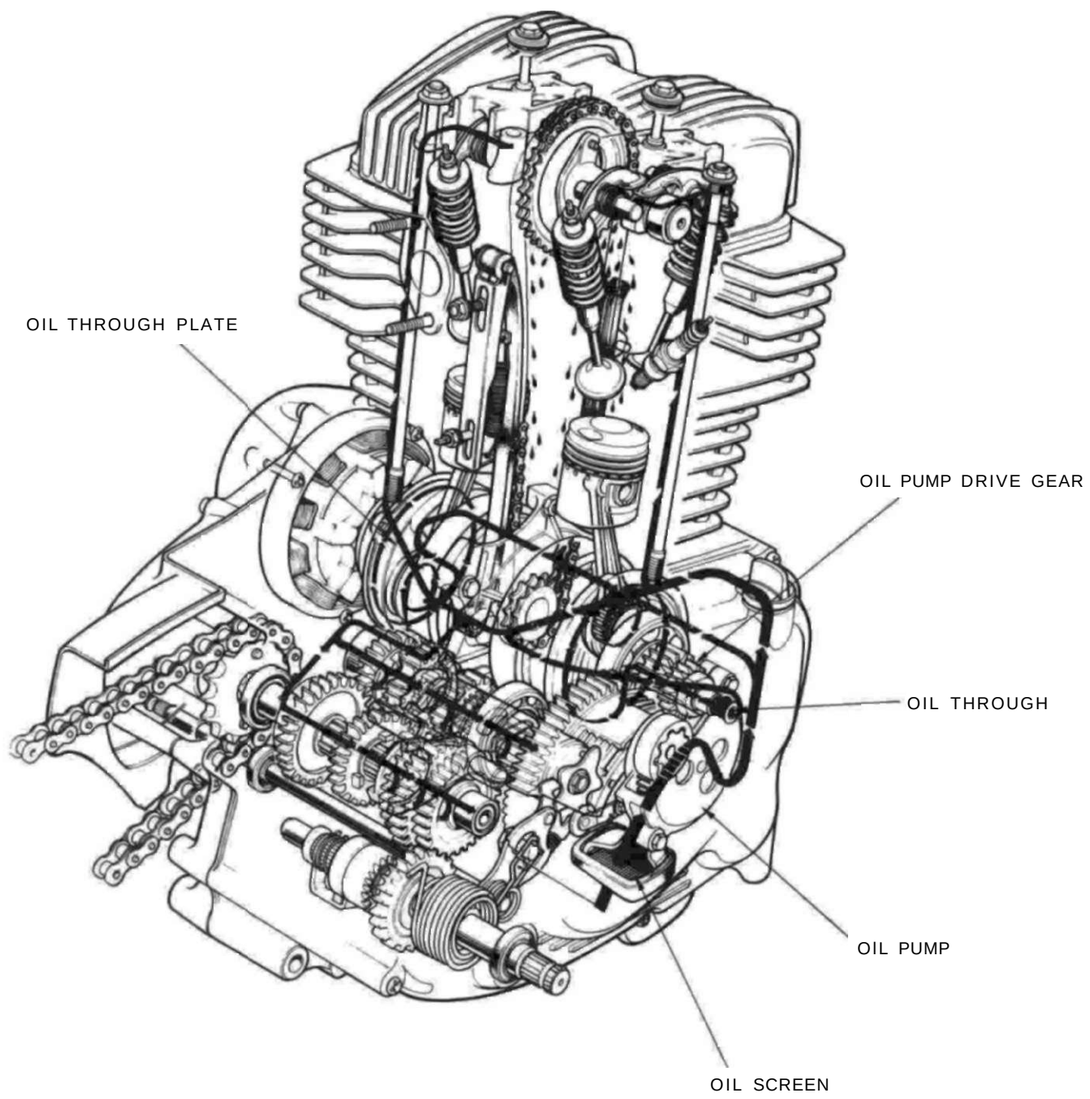
LUBRICATION DIAGRAM



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SERVICE INFORMATION

• WORKING PRACTICE

Engine oil level check . . . . . see page 2-2.
see page 2-2.
see page 2-2.

• SPECIFICATIONS

ENGINE

Spark plug

Plug gap: 0.6-0.7 mm (0.024-0.028 in,)

Type:

For cold climate below 5°C (41°F>		Standard		For extended high speed driving	
ND	NGK	ND	NGK	ND	NGK
U20FS	C6H	U22FS	C7HS	U24FB	C9H

Valve clearance INTAKE: 0.05 mm (0.002 in.)
EXHAUST: 0.05 mm (0.002 in.)
Throttle free play: 2-6 mm (1/8-1/4 in.)
Idle speed: 1,200 ± 100 rpm

CHASSIS

Front brake free play: 10-20 mm (3/8-3/4 in.)
Rear brake free play: 20-30 mm (3/4-1-1/4 in.)
Drive chain free play: 15-25 mm (5/8-1 in.)
Clutch free play: 10-20 mm (3/8-3/4 in.)
Tire pressures:
Up to 90 kg (200 lbs.) load
Front 1.75 kg/cm² (25 psi)
Rear 2.0 kg/cm² (28 psi)
Up to vehicle capacity load
Front 1.75 kg/cm² (25 psi)
Rear 2.25 kg/cm² (32 psi)

• TORQUES

Front axle nut: 4.0-5.0 kg-m (28.9-36.2 ft lb.)
Rear axle nut: 4.0-5.0 kg-m (28.9-36.2 ft-lb.)
Spoke nipples: 0.2-0.35 kg-m (1.4-2.5 ft-lb.)

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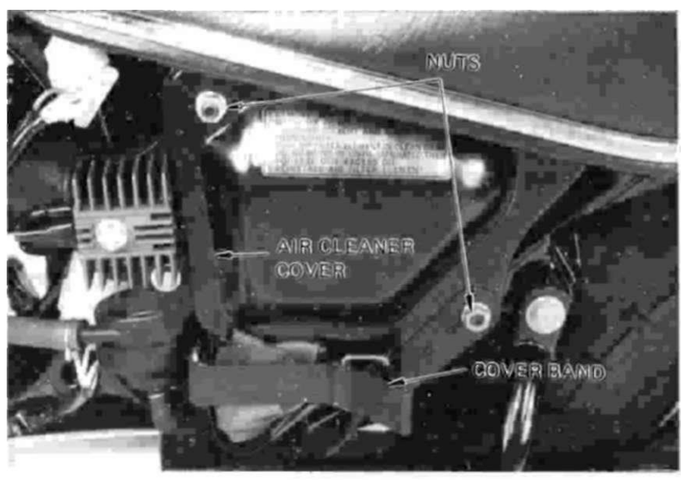
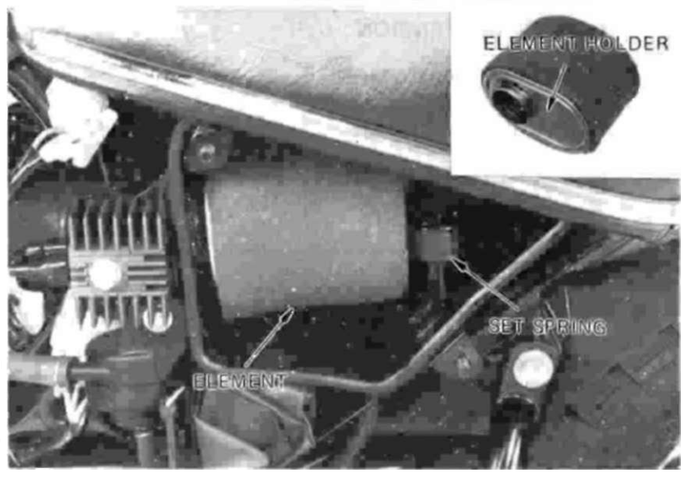
AIR CLEANER

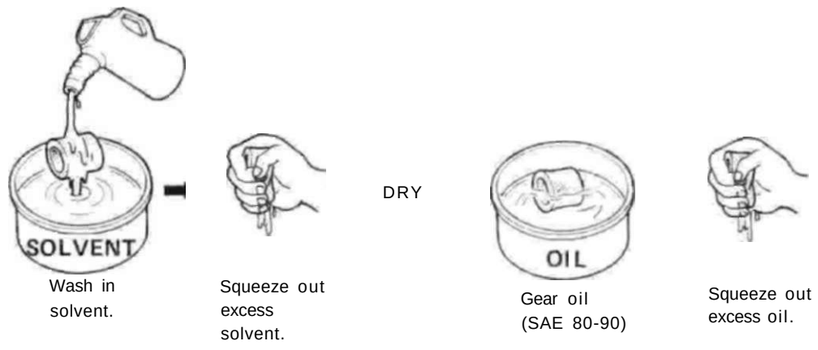
Remove the left side cover.
Remove the two air cleaner cover attaching nuts, and cover.



Remove the air cleaner set spring and element holder
Remove the air cleaner element retainei and element.



Wash the element in non-flammable or high flash point solvent.
Allow to dry.
Soak the element in gear oil (SAE 80-90), and squeeze out excess.



Wash in solvent.
Squeeze out excess solvent.
Gear oil (SAE 80-90)
Squeeze out excess oil.

install the air cleaner element.
Install the holder, set spring and air cleaner cover.
Install the left side cover.

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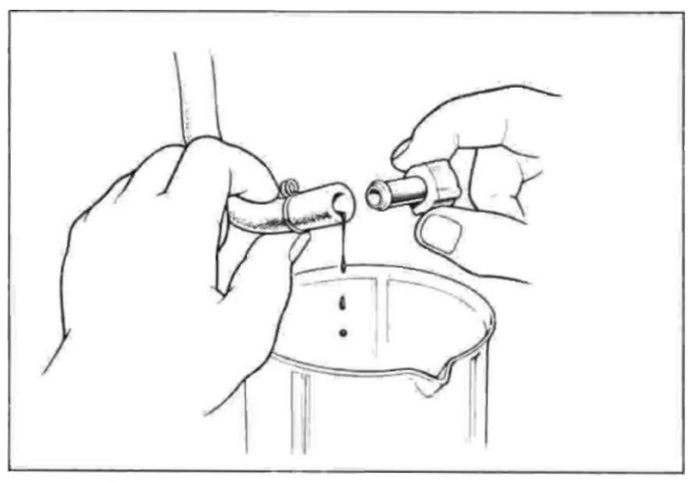
CRANKCASE BREATHER

Remove drain plug from tube, and drain deposits.

Reinstall drain plug.

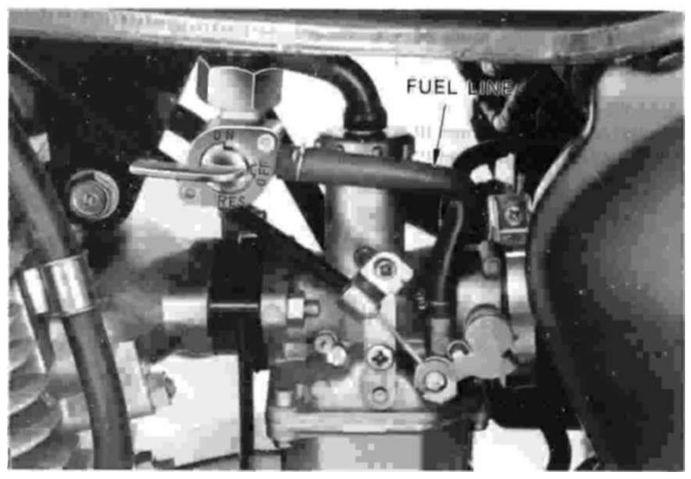
NOTE

Service more frequently when driven in rainy conditions or at wide open throttle, or if deposit level can be seen in the transparent section of drain tube.



FUEL LINES

Replace any parts which have deterioration, damage, or leakage.



SPARK PLUG

Disconnect the spark plug cap and remove the spark plugs with a spark plug wrench.

Visually inspect the spark plug electrodes for wear. The center electiode should have square edges and the side electrode should have a constant thickness.

Discard the spark plug if there is apparent wear or if the insulator is cracked or chipped. If the spark plug deposits can be removed by sandblasting or wire brushing, the spark plug can be reused. Inspect the gap with a gauge and adjust by bending the side electrode.

SPARK PLUG GAP: 0.6-0.7 mm (0.024-0.028 in.)

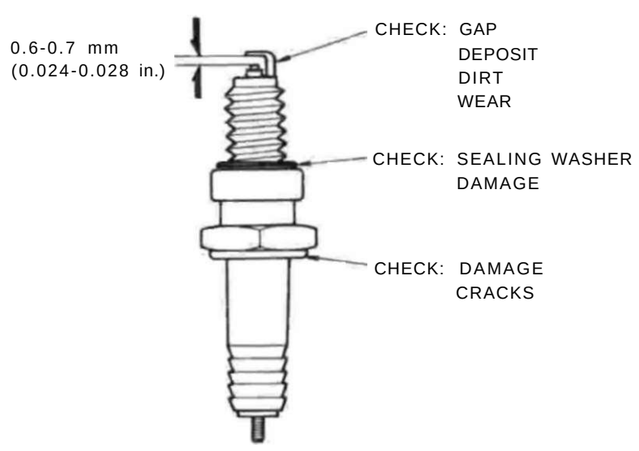
RECOMMENDED REPLACEMENT:

For cold climate: below 5°C (41°F)	U20FS (ND) or C6H (NGK)
Standard:	U22FS (ND) or C7HS (NGK)
For extended high speed driving:	U24FB (ND) or C9H (NGK)

Check the spark plug sealing washer and replace with a new one if damaged.

NOTE

To install, turn finger tight then tighten with a spark plug wrench.



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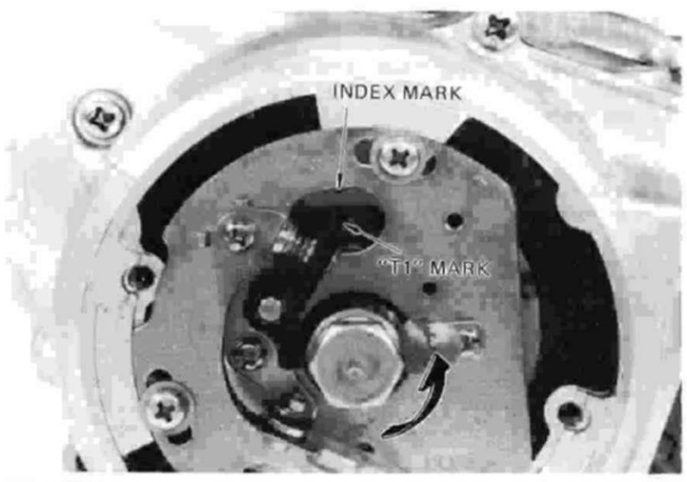
VALVE CLEARANCE

NOTE

Inspect and adjust valve clearance while the engine is cold (below 35°C/95°F).

Remove the cylinder head cover and the generator cover.

Rotate the generator rotor counterclockwise and align the "T1" mark on the spark advancer with the index mark on the left crankcase cover. Piston of cylinder being checked must be at T.D.C. (Top Dead Center) of compression stroke.



Inspect intake and exhaust valve clearances by inserting a feeler gauge between the adjusting screw and valve stem.

VALVE CLEARANCE:

INTAKE: **0.05** mm **(0.002** in.)
EXHAUST: **0.05** mm **(0.002** in.)

Adjust by loosening the lock nut and turn the adjusting screw until there is a slight drag on the feeler gauge. Hold adjusting screw and tighten the lock nut.

Recheck the valve.clearance.

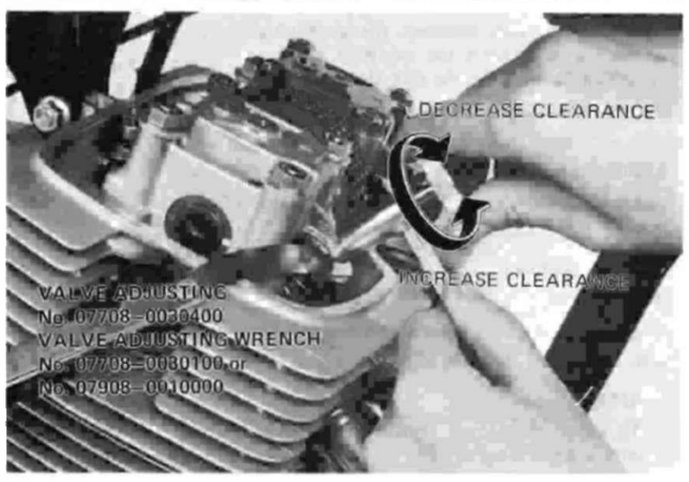
Rotate generator rotor one full turn (360) counterclockwise and align "T1" mark with index mark.

Piston of other cylinder being checked must be at T.D.C. of compression stroke.

Adjust valves of the other cylinder using above procedures.

Reinstall cylinder head cover and generator rotor cover.

TORQUE: CYLINDER HEAD COVER BOLTS
0.8-1.2 kg-m (5.8-7.8 ft-lb.)



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CONTACT POINT GAP

Clean the point contact surfaces with an electrical conîact cleaner to remove any oil film or airt. If rhe surfaces are level but grayish In color or slightly pitted, file them with a flexible point file lightly. If the points have à noticeable transfer of metal from one surface to the other, have evidence of heavy arcing, or are worn at an angle, replace the point set. Rotate the rotor counterclockwise until points aie at their widest gap.

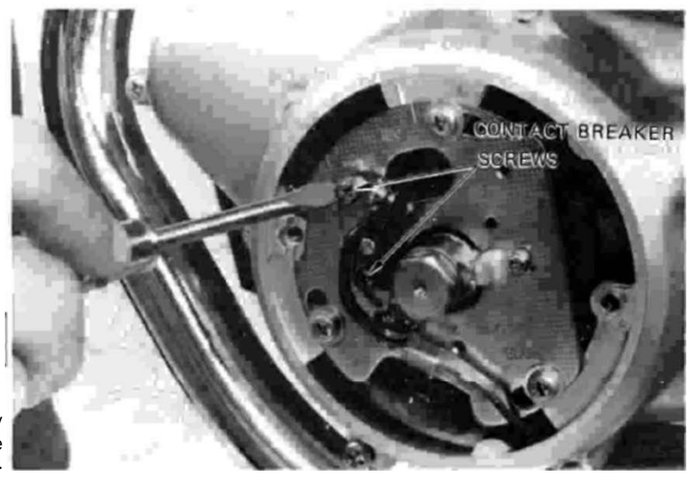
Check the point gap with a feeler gauge

POINT GAP: 0.3-0.4 mm (0.012-0.016 in.)

If the gap exceeds the specified range, loosen two contact breaker plate locking screws and move the contact breake' plate to achieve the correct gap.

Retighten the locking screws and recheck the point gap.

Adjust the ignition timing.



IGNITION TIMING

NOTE

Adjust the contact breaker point gap before this adjustment.

- Using a Continuity Light and Battery

Connect one of the lead cables of continuity light to contact breaker terminal, and the other end to the positive (+) terminal of **battery.**

Ground the negative I-) battery terminal to the frame body.

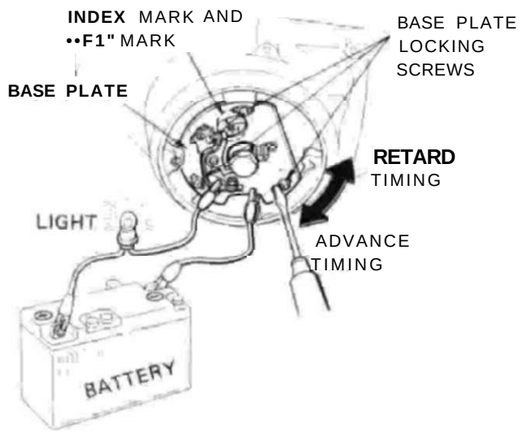
Rotate generator rotor counterclockwise, and align the "F l" mark on the spark advance) to index mark on the left crankcase cover

The timing is correct, if light goes out at this time. Adjust the timing as follows, if necessary

- Loosen three contact breaker base plate locking sciews and rotate base plate clock**wise or** counterclockwise to achieve the **correct** timing.
- **When** the timing is too early, rotate base **plate** counterclockwise.

  When the timing is too late, rotate base **plate** clockwise.
- **Retighten** locking sciews and recneck the **timing.**

Install the generator cover.



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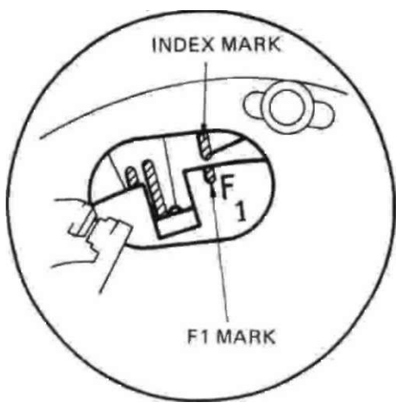
Using a Stroboscopie Timing Light

NOTE

Adjust the contact breaker point gap before this adjustment.

Connect a tachometer and a timing light.
Start the engine and make sure that the engine idle speed is 1,200 ±100 rpm.
The timing is correct, if the "F1" mark on the spark advancer is aligned to index mark on the left crankcase cover.
Adjust the timing, using the same procedures as for the continuity light.
Reinstall the generator cover.

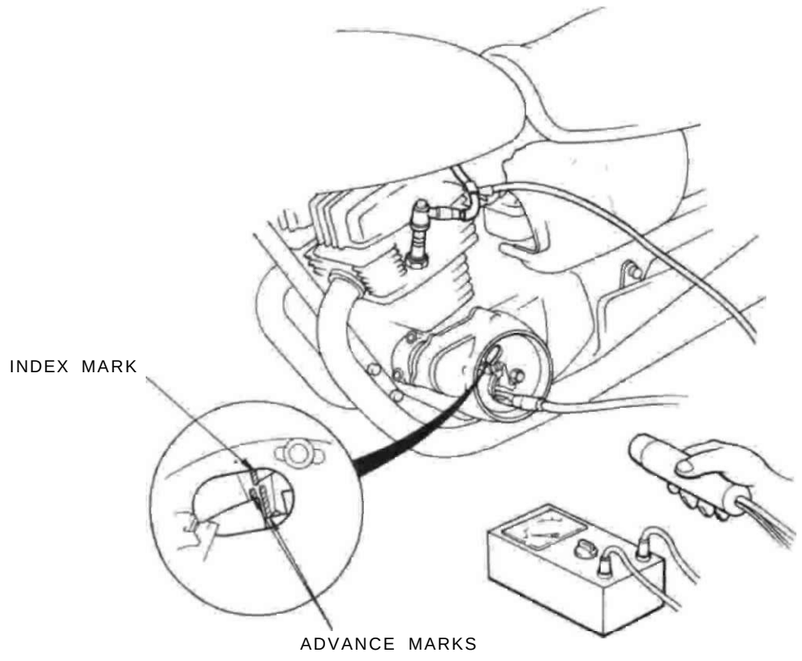


IGNITION TIMING ADVANCE

Connect a tachometer and stroboscope timing light.
Raise the engine speed to full 3,100 rpm.

FULL ADVANCE: 3,100 rpm

Check that the index mark aligns with the advance marks, at 3,100 rpm.
If the index mark is out of the advance marks, check the spark advance operation and replace.



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CAM CHAIN TENSION

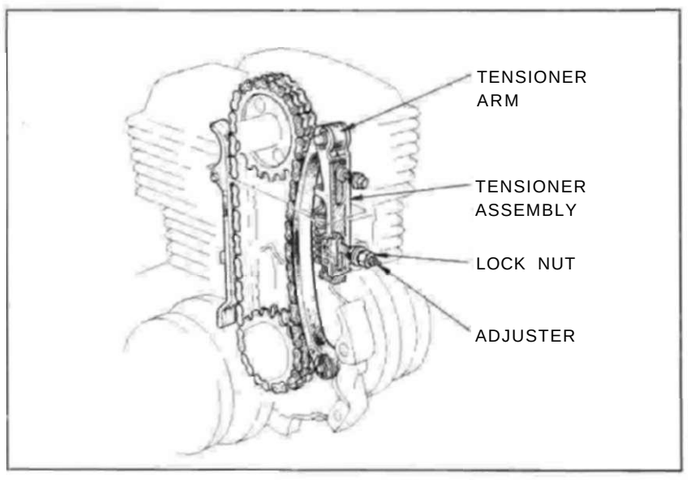
Stop the engine and remove the generator rotor cover. Rotate the generator rotor counter-clockwise and align the "T 1" mark on the spark advancer with the index mark on the left crank case cover.

Loosen the cam chain tensioner lock nut.

When the lock nut is loosened the cam chain will be automatically positioned to provide the correct tension.

After adjustment, tighten the lock nut securely.

NOTE: When tightening the lock nut, hold the adjusting bolt to prevent it from turning with the lock nut.

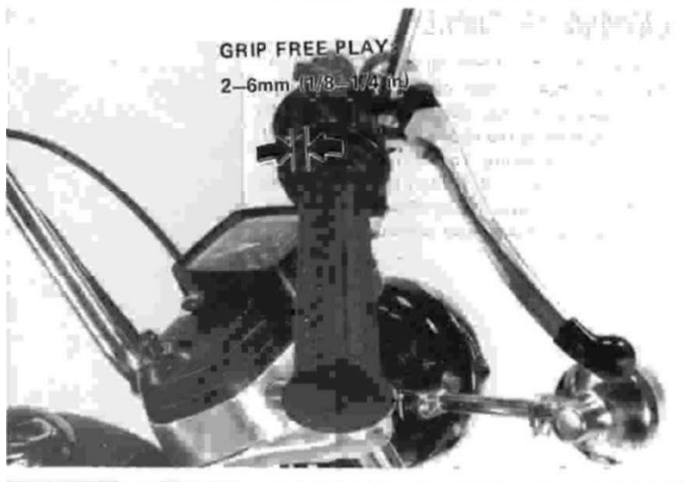


THROTTLE OPERATION

Inspect the throttle cable for deterioration, damage, or kinks and measure the throttle grip free play at the throttle grip flange.

THROTTLE GRIP FREE PLAY.
2-6 mm (1/8-1/4 in.)

Check for smooth throttle grip rotation from fully closed to fully open in all steering positions. Adjust or replace as necessary.

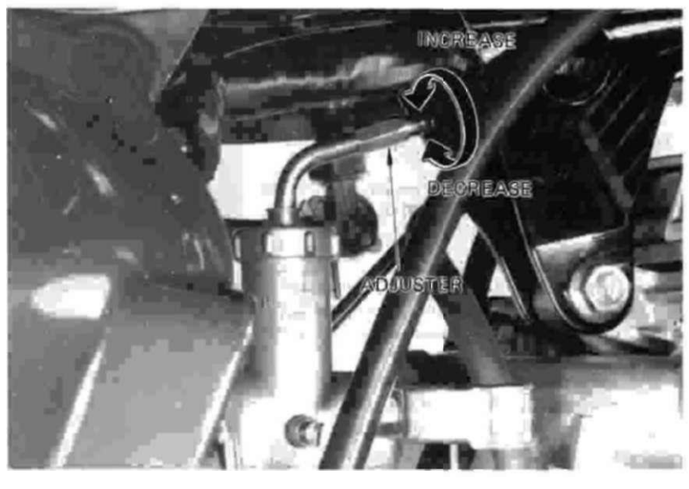


Adjust the free play, by loosening the adjusting lock nut and turning the adjuster.

Tighten the lock nut securely.

Major adjustments are made with the lower adjuster on the carburetor.

Install the rubber cap securely, after adjustment.



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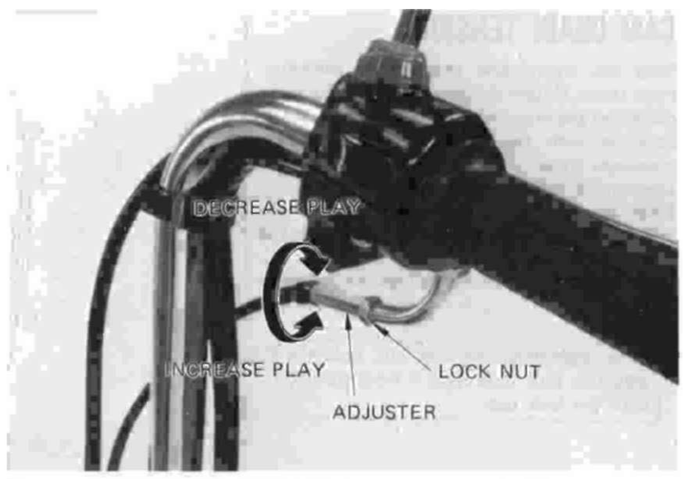
Minor adjustments are performed with the upper adjuster.
Adjust with the throttle grip in the closed position.
Recheck the operation of the throttle grip.



CARBURETOR CHOKE

Check the choke knob for smooth operation. Pull the choke knob out to "fully closed" and make sure that the choke valve is fully closed by moving the choke lever on carburetor. Adjust by loosening the choke cable clamp on the carburetor. Retighten the clamp, holding the choke lever "fully closed".
Recheck the choke valve operation.

CARBURETOR IDLE SPEED

NOTE

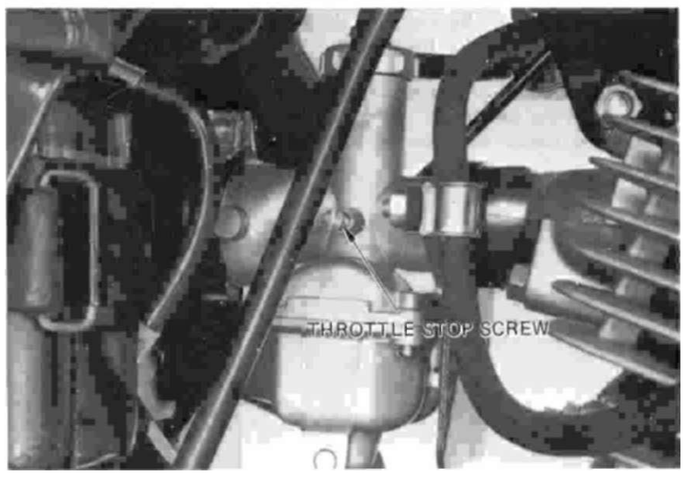
Check the idle speed after all other maintenance items have been performed.

Support the vehicle in an upright position. Warm up the engine.
Turn the throttle stop screw as required to obtain an idle speed of 1,200 ± 100 rpm.

NOTE

The engine must be warm for accurate idle speed adjustment. Stop and go driving for ten minutes should be sufficient.

Motorcycles manufactured after December 31, 1977 have the pilot screw factory pre-set. Do not adjust unless the carburetor is overhauled.



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ENGINE COMPRESSION TEST

Warm up the engine.
Remove the spark plugs.
Insert a compression gauge.
Push the choke knob in.
Open the throttle grip fully
Crank the engine five revolutions.
Repeat the cylinder test procedure for the other.

NOTE

Watch for compression leakage at the gauge connection.

COMPRESSION: 12.0 ± 2 kg/cm² (170 * 28 psi)
ALLOWABLE DIFFERENCE BETWEEN CYLINDERS:
4 kg/cm' (57 psi)

Low compression can be caused by:
- Valve leakage
- Improper valve adjustment
- Blown cylinder head gasket
- Piston ring wear

High compression can be caused by:
- Carbon deposits in the combustion chamber or on piston head.

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DRIVE CHAIN

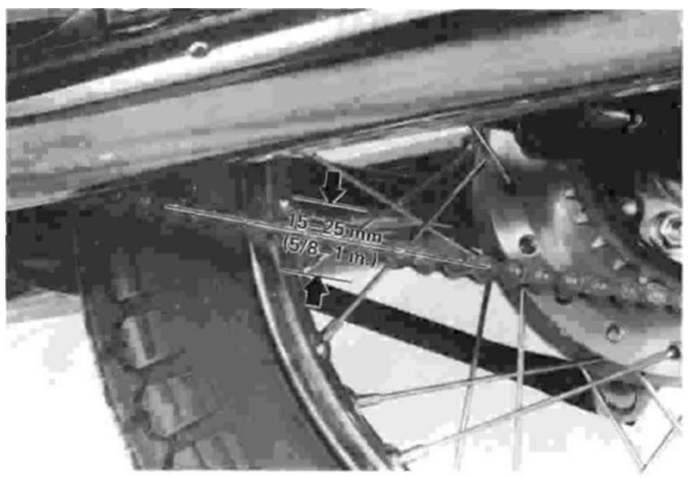
NOTE

Perform the following Inspection and Adjustment with the ignition switch "OFF".

Place the vehicle on its side stand and shift the transmission into neutral.

Inspect the drive chain free play at midway between sprockets on the lower chain run.

FREE PLAY: 15-25 mm (5/8-1 in.)



Adjust as follows:

Remove the rear axle nut cotter pin and loosen the rear axle nut.

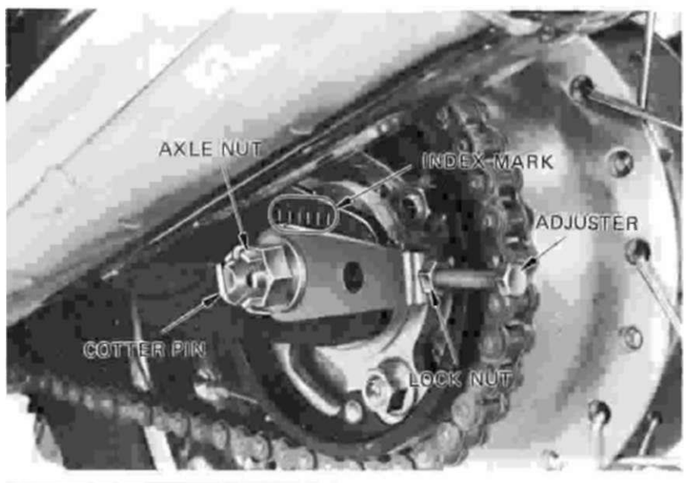
Loosen the lock nuts and equally turn the adjuster bolts on both sides.

Make sure that the index marks on both sides align.

Tighten the axle nut and install a new cotter pin.

REAR AXLE NUT TORQUE:
4.0-5.0 kg-m (25.9-36.2 ft-lb.)

Tighten lock nuts on the both adjusters.



• CLEANING/LUBRICATION

When the drive chain becomes extremely dirty, it should be removed and cleaned prior to lubrication.

Remove the master link retaining clip with pliers.

NOTE

Do not bend or twist the clip.

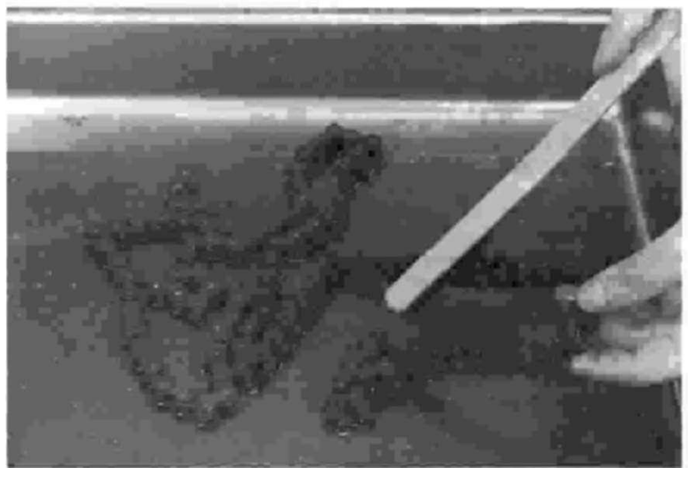
Remove the master link. Remove the drive chain Clean the drive chain with non-flammable or height flash point solvent brush and allow to dry.

Inspect the drive chain for possible weai or damage. Replace any chain that is damaged or excessively worn.

Inspect the sprocket teeth for excessive wear or damage. Replace if necessary.

NOTE

Never install a new drive chain on worn sprockets or a worn chain on new sprock ets. Both chain and sprockets must be in good condition, or the new replacement chain or sprockets will wear rapidly.



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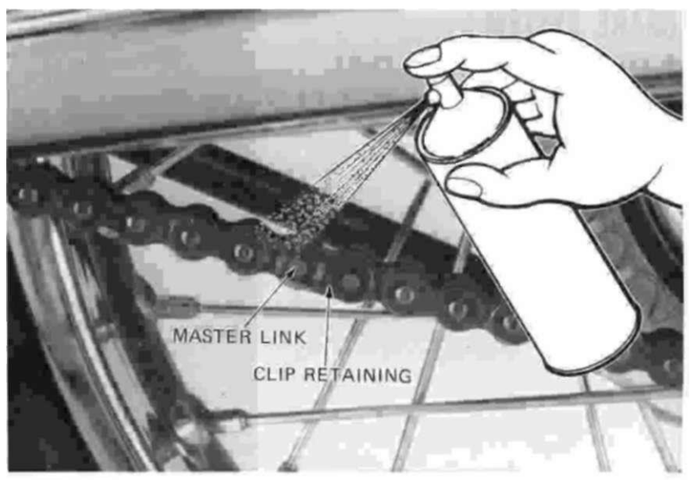
Lubricate the drive chain. Saturate each chain link joint.

NOTE

Commercial aerosol type drive chain lubricants are recommended.'

Install the drive chain.
Install the master link.
Install the master link retaining clip so that the closed end faces the direction of forward wheel rotation.
Master links are reusable, if they remain in excellent condition, but it is recommended that a new master link be installed whenever the drive chain is reassembled.
Adjust the drive chain (Page 3—10).



BATTERY

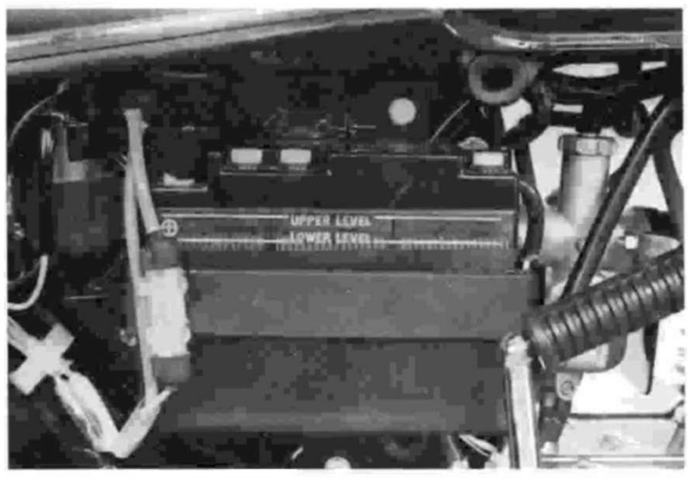
Remove the right side cover.
Inspect the battery fluid level.
When the fluid level nears the lower level, refill with distilled water to the upper level.

NOTE

Add only distilled water. Tap water will shorten the service life of the battery.

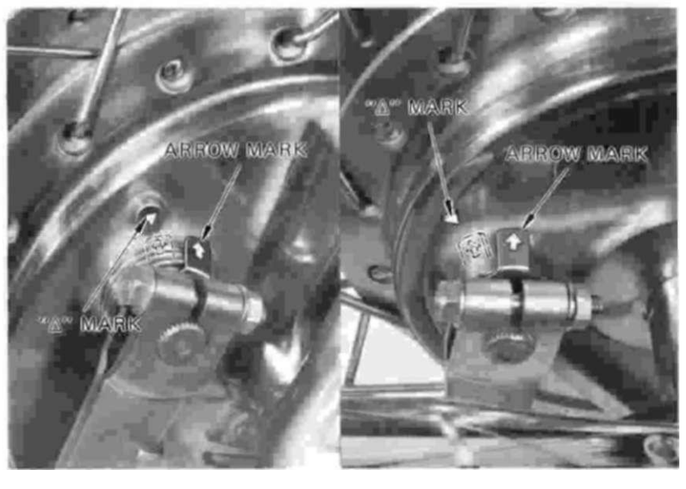
WARNING

The battery electrolyte contains sulpheric acid. Protect your eyes, skin, and clothing. In case of contact, flush thoroughly with water and call a doctor if your eyes were exposed.



BRAKE SHOE WEAR

Replace the brake shoes if the arrow mark on the indicator plate aligns with the "A" mark of the brake panel when the brake is applied.



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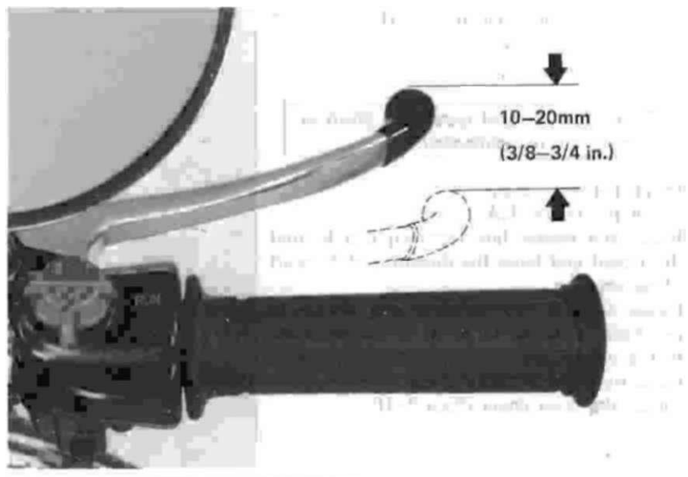
BRAKE SYSTEM

• FRONT BRAKE FREE PLAY

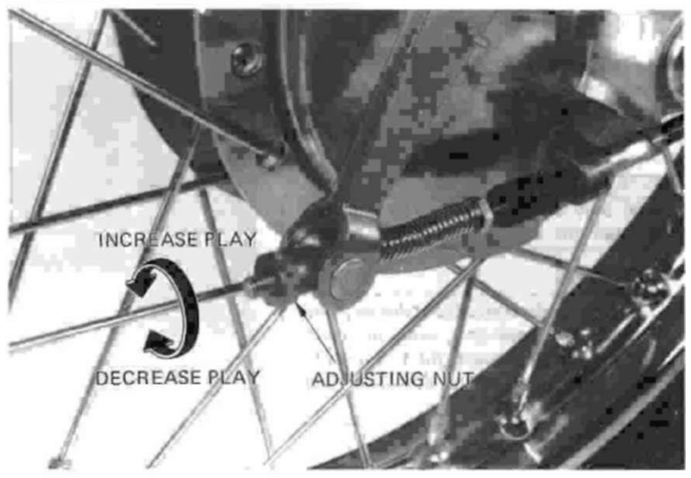
Measure the front brake free play at the tip of the brake lever.

BRAKE LEVER FREE PLAY:
10-20 mm (3/8-3/4 in.)



Major adjustments are performed with the lower adjuster.

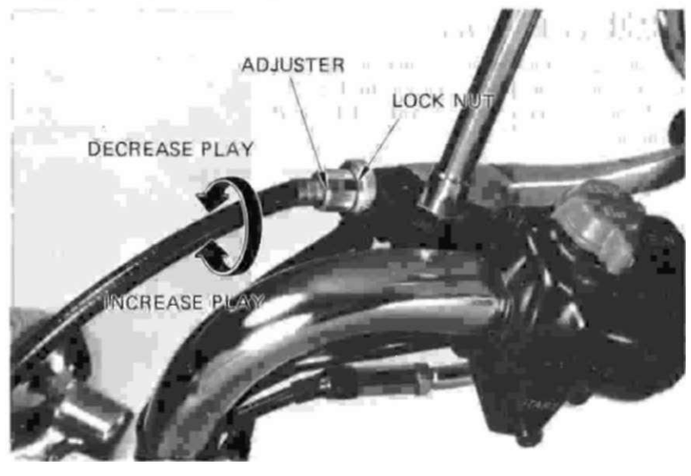
Turn the adjuster to obtain the specified free play.



Perform minor adjustments with the upper adjuster.

Loosen the lock nut and turn the adjuster to obtain the specified free play.

Tighten the lock nut.



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INSPECTION/ADJUSTMENT

• BRAKE PEDAL HEIGHT

Loosen the lock nut and adjust the pedal height with the stopper bolt.
Tighten the lock nut securely.

• BRAKE PEDAL FREE PLAY

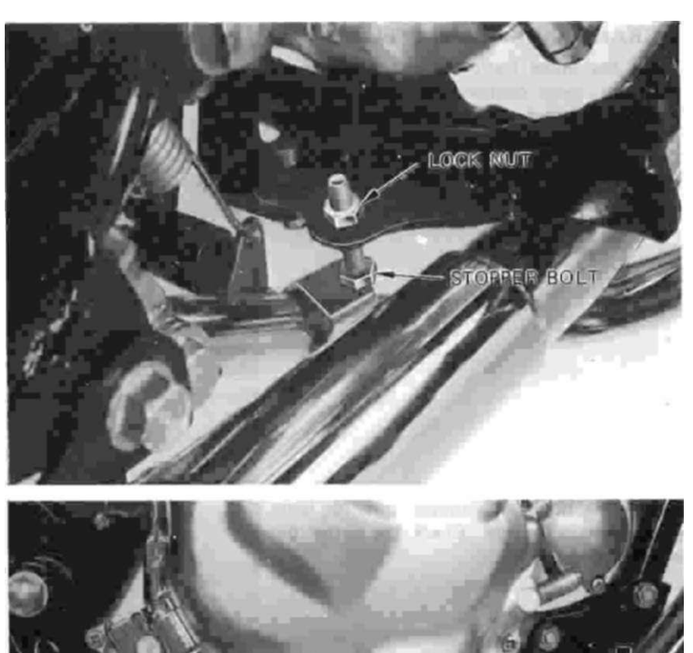
NOTE

Adjust the rear brake pedal free play after adjusting brake pedal height.

Measure free play before the brake starts to engage.

REAR BRAKE FREE PLAY:
20-30 mm {3/4-1-1/4 in.)

Turn the rear brake adjusting nut, if adjusting is necessary.



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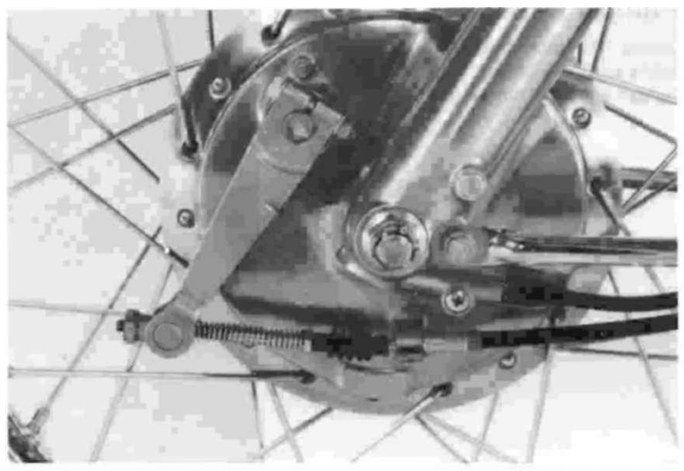
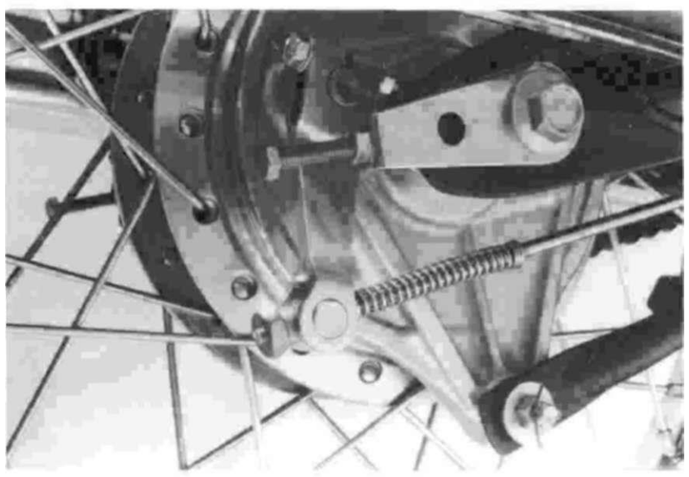
• BRAKE LINKAGE INSPECTION

Check the brake rod/cable and brake lever/pedal for loose connections, excessive play, bending or other damage. Replace or repair if necessary.



Inspect the brake and stopper arms for loose connections or damage. Check the cotter pin is installed properly.

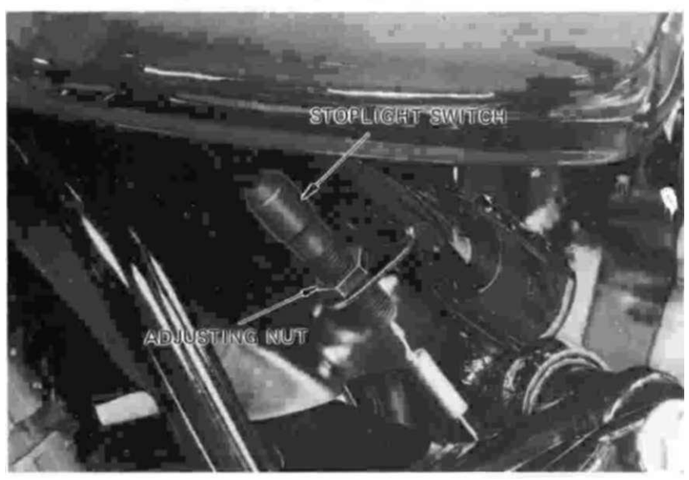


STOPLIGHT SWITCH

Perform this adjustment after adjusting rear brake pedal free play and height.

The stoplight should come on when the brake pedal is depressed 20 mm (3/4 in.) from the standard position.

Adjust by turning switch adjusting nut.



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HEADLIGHT AIM

Perform vertical adjustment by loosening both headlight case mounting bolts.

Horizontal adjustment is made by turning the adjusting screw on the headlight rim. Turn the adjusting screw clockwise to direct beam toward right side of rider.

NOTE

Adjust the headlight beam as specified by local laws and regulations.

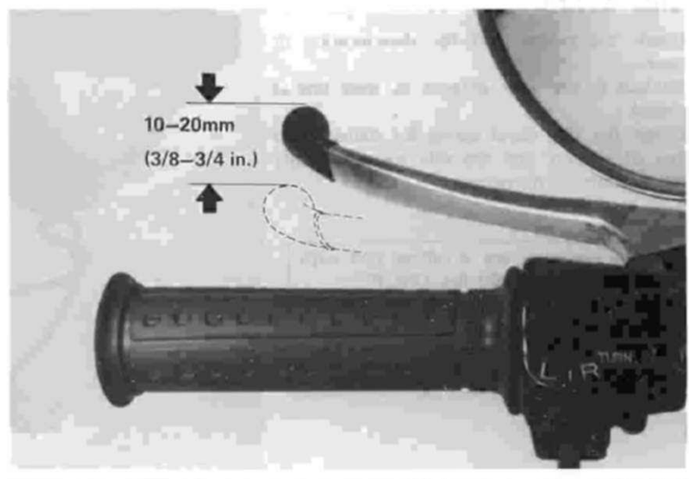
It *[R\i\(,*

An improperly adjusted headlight may blind oncoming drivers, or it may fail to light the road for a safe distance.

CLUTCH FREE PLAY

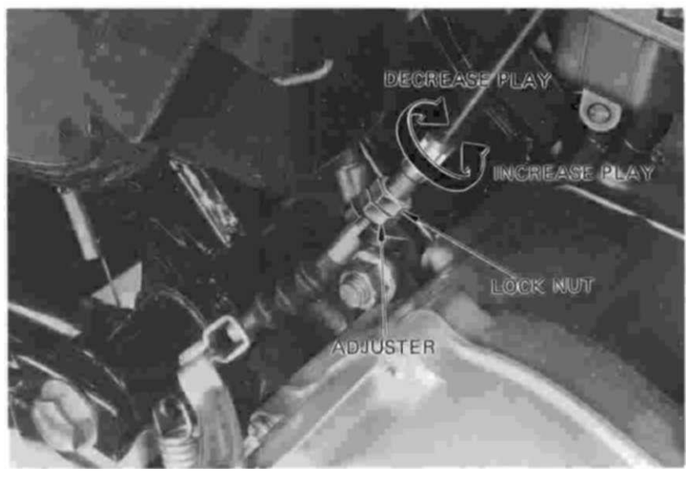
Measure the clutch free play at the tip of the clutch lever.

CLUTCH FREE PLAY: 10-20mm (3/8-3/4 in.)



Major adjustments are made at the lower adjuster.

Loosen the lock nut and turn adjuster.



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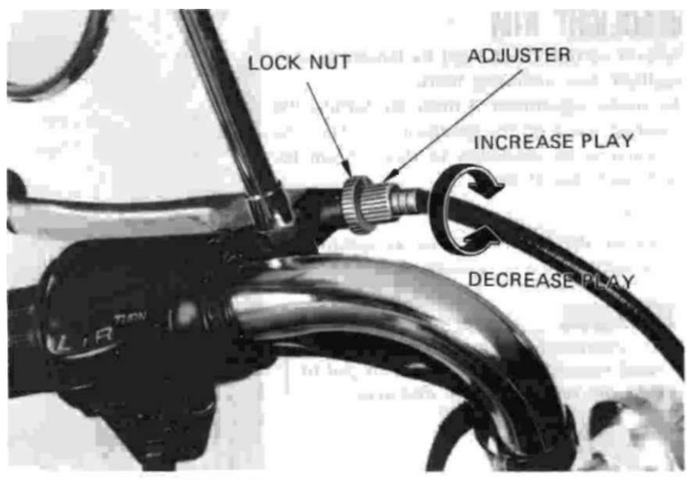
Minor adjustments are made at the upper adjuster by loosening the lock nut and turning adjuster.
Recheck the clutch operation.

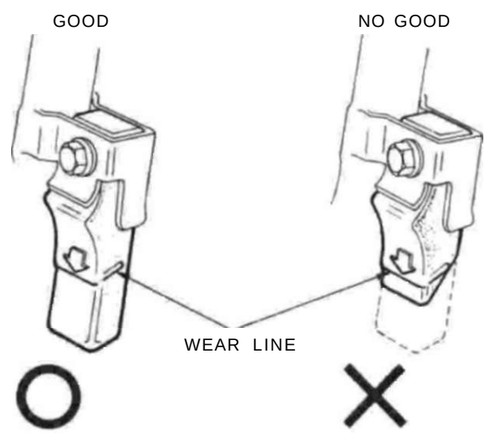


SIDE STAND

Check the rubber pad for deterioration or wear.
Replace if any wear extends to wear line as shown.
Check the side stand spring for damage and loss of tension, and the side stand assembly for freedom of movement.

NOTE

When replacing use a rubber pad with the mark "Over 260 lbs. ONLY".
Spring tension is correct if the measurements fall within 2-3 **kg (4.4—**6.6 lb.) when pulling the side stand lower end using a spring scale.



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SUSPENSION

- FRONT

Check the action of the front forks by compressing them several times.
Check the entire fork assembly for signs of leaks, or damage. Replace any components which are unrepairable.
Torque all bolts.
Check the front wheel for trueness.

- REAR

Place the motorcycle on a support to raise the rear wheel.
Move the rear wheel sideways with force to see if the swingarm bushings are worn. Replace excessively worn.
Check the entire suspension assembly to see if it is securely mounted, damaged or distorted.
Check the rear wheel for trueness.

WHEELS/SPOKES

- TIRE PRESSURE

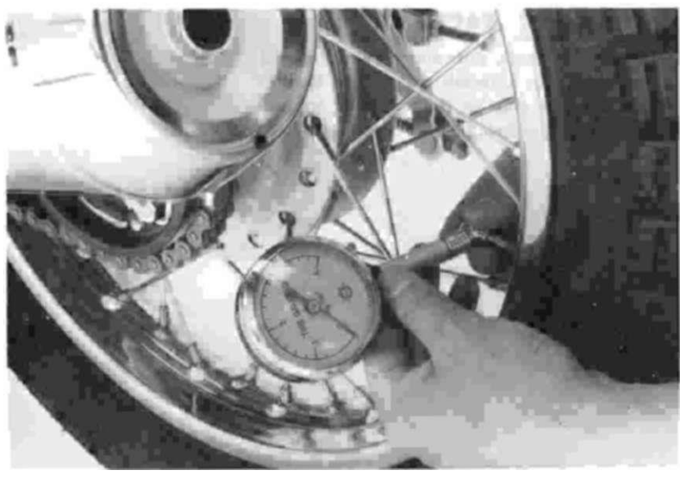
NOTE

Tire pressure should be checked when the tires are COLD.

Check the tires for cuts, imbedded nails, or other sharp objects.

Recommended tire pressure and tire size:

	LOAD	
Cold tire pressures kg/cm² (psi)	Up to 90 kg (200 lbs.) load	Front: 1.75 (25) Rear: 2.0 (28)
	Up to vehicle capacity load	Front 1.75 (25) Rear: 2.25 (32)
Vehicle capacity load limit	135 kg (300 lbs.)	
Tire size	Front 3.00-17-4PR Rear: 3.50-16-4PR	



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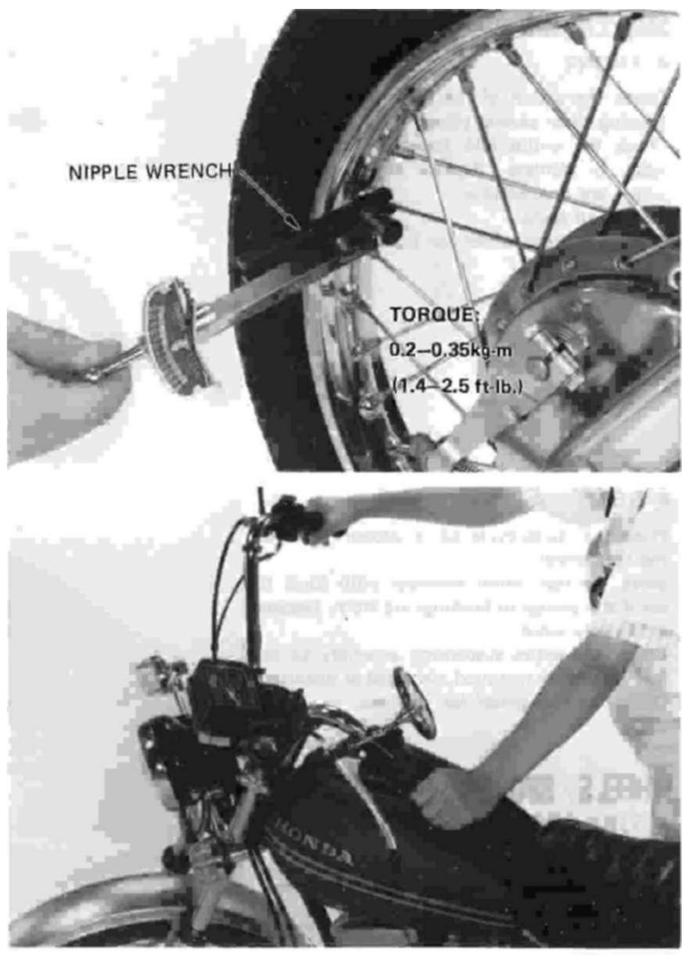
WHEEL SPOKE RETIGHTENING

Retighten the wheel spokes periodically.

TIGHTENING TORQUE: 0.2-0.35 kg-m (1.4-2.5 ft-lb.)



STEERING HEAD BEARING

NOTE

Check that the control cables do not interfere with the rotation of the handlebars.

Raise the front wheel off the ground.
Check that the handlebar rotates freely. If the handlebar moves unevenly, binds or has vertical movement, adjust the steering head bearing by turning the steering head adjusting nut with a pin spanner.

NUTS. BOLTS. FASTENERS

Retighten the bolts, nuts and fasteners related frame at regular intervals shown the Maintenance Schedule and for the tightening torque, refer to Torque Specification (see page 1-6).

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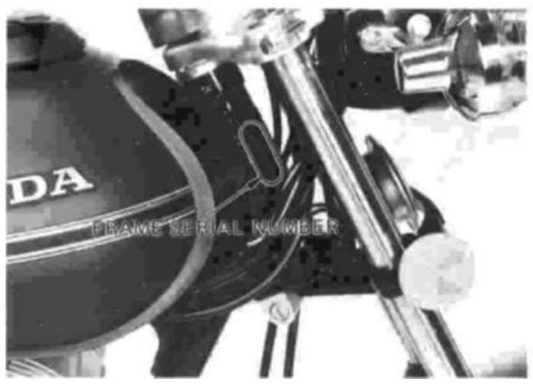
CM185T BEGINNING WITH F/N 2000014

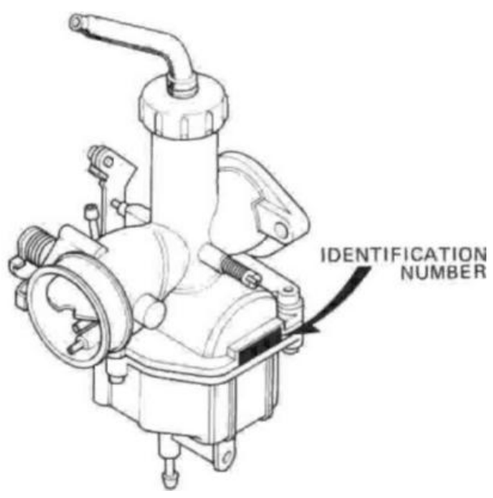
The frame serial number is on the right side of the steering head.



The legal vehicle identification number (VIN) is on the left side of the steering head.

The engine serial number is on the left lower side of the crankcase.

The carburetor identification number is on the right of the carburetor body.



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HONDA CM185T

4. CARBURETOR

SERVICE INFORMATION	4-1
TROUBLESHOOTING	4-2
CARBURETOR REMOVAL	4-3
CARBURETOR TOP DISASSEMBLY	4-3
THROTTLE VALVE DISASSEMBLY	4—4
FLOAT, FLOAT VALVE AND JETS	4-4
FLOAT LEVEL ADJUSTMENT	4-6
THROTTLE VALVE ASSEMBLY	4-6
CARBURETOR INSTALLATION	4-7
ADJUSTMENT	4-7

SERVICE INFORMATION

- WORKING PRACTICE

Use caution when working with gasoline. Always work in a well-ventilated area and away from sparks or open flames. When disassembling fuel system parts, note the locations of the O-rings. Replace them with new ones on re-assembly. The float bowls have drain plugs that can be removed to drain residual gasoline.

- TOOL

Common Tool
Float gauge Tool No. 07401-0010000

- SPECIFICATIONS

ITEM	DESCRIPTION
Venturi dia.	22 mm (0.87 in.)
Setting mark	PD98A
Float level	14.5 mm (0.57 in.)
Idle speed	1.200 í 100 rpm
Throttle grip free play	2 - 6 m m (1/8 - 1/4 in.)
Main jet	#105

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TROUBLESHOOTING

Engine Cranks But Won't Start
1. No fuel in tank
2. No fuel to cylinders
3. Too much fuel getting to cylinders
4. No spark at plugs (ignition malfunction)
5. Air cleaner clogged
6. Improper choke operation
7. Improper throttle operation

Engine Idles Roughly, Stalls, or Runs Poorly
1. Idle speed incorrect
2. Ignition malfunction
3. Low compression
4. Rich mixture
5. Lean mixture
6. Air cleaner clogged
7. Air leaking into manifold
8. Fuel contaminated
9. Carburetor malfunction

Lean Mixture
1. Carburetor fuel jets clogged
2. Fuel cap vent blocked
3. Fuel filter clogged
4. Fuel line kinked or restricted
5. Float valve faulty
6. Float level too low
7. Air vent tube clogged
8. Intake air leak
9. Pilot screw misadjusted

Rich Mixture
1. Choke stuck closed
2. Float valve faulty
3. Float level too high
4. Carburetor air jets clogged
5. Pilot screw misadjusted
6. Air cleaner clogged

Misfiring during Acceleration
1. Incorrect carburetor air/fuel mixture

Backfiring
1. Incorrect carburetor air/fuel mixture
2. Carburetor malfunction

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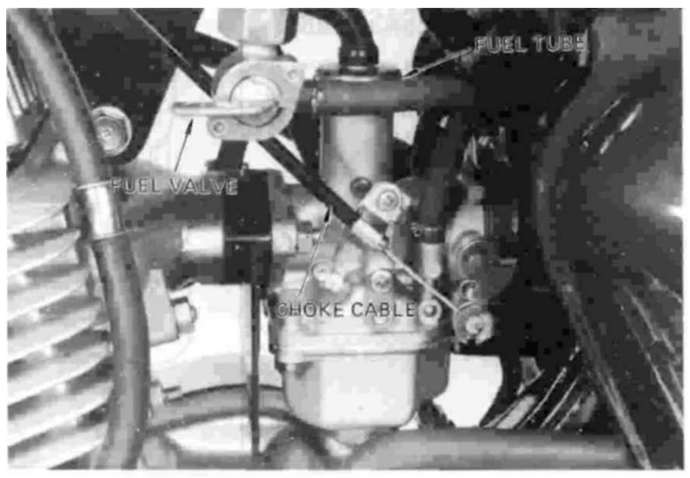
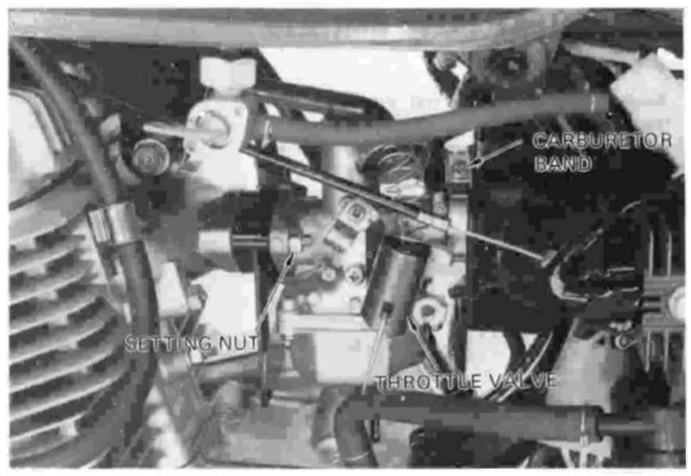
CARBURETOR REMOVAL

Turn the fuel valve "OFF" and disconnect the fuel tube.
Remove the choke cable after loosening the screw.

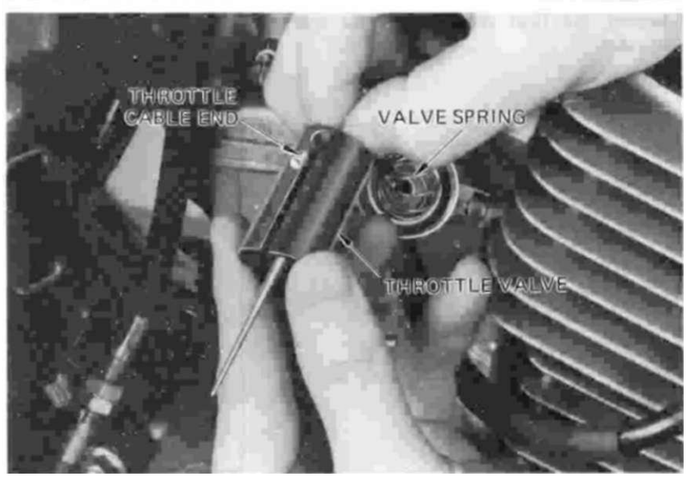


Loosen the screw securing the carburetor band and remove setting nuts.
Unscrew the carburetor top cap, pull the throttle valve out and remove the carburetor.



CARBURETOR TOP DISASSEMBLY

Remove the throttle cable end from the throttle valve groove while depressing the throttle valve spring.



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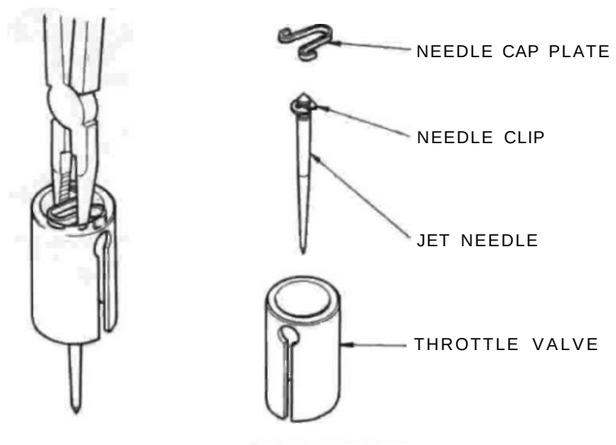
THROTTLE VALVE DISASSEMBLY

Pry off the needle cap plate and remove the needle jet.

Inspect the needle jet and throttle valve surface for dirt, scratch and wear.

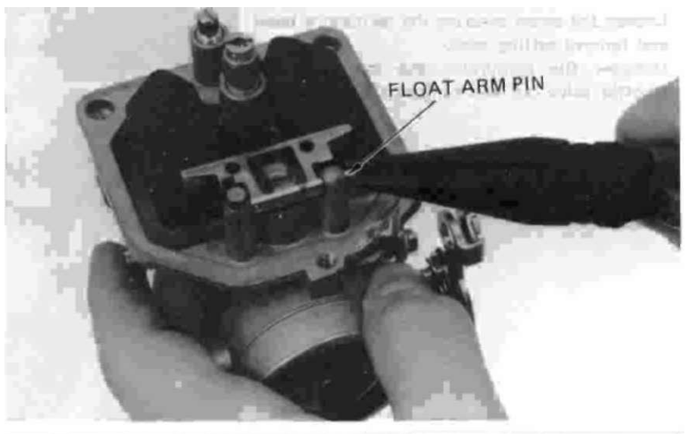


FLOAT, FLOAT VALVE AND JETS

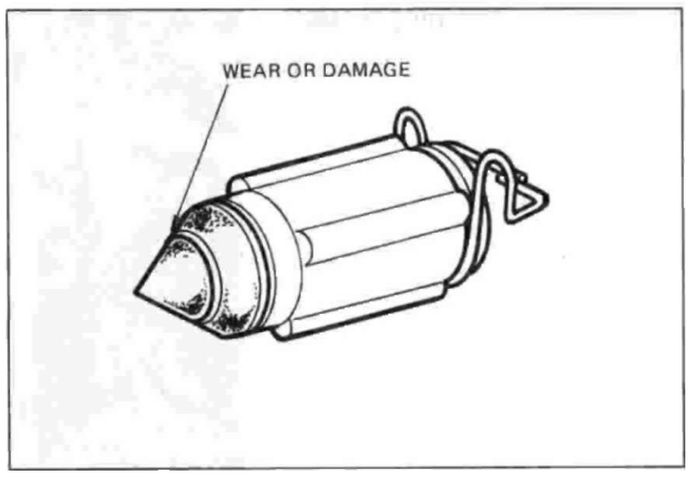
- DISASSEMBLY

Remove the carburetor and disassemble the float chamber.

Pry off the float arm pin with a pair of pliers. Remove the float and float valve.



Inspect the float valve surface for wear or damage.



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CARBURETOR

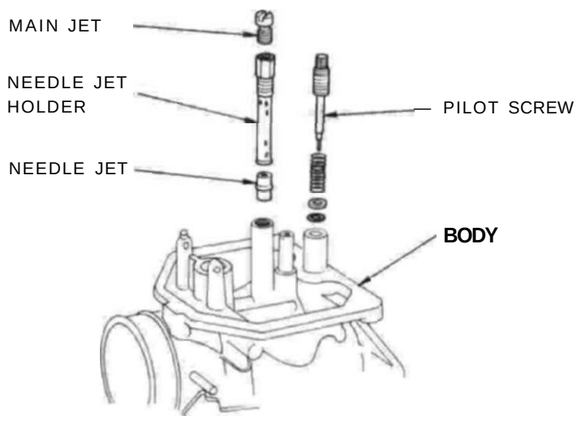
Remove the main jet, the needle jet holder and the needle jet.

NOTE

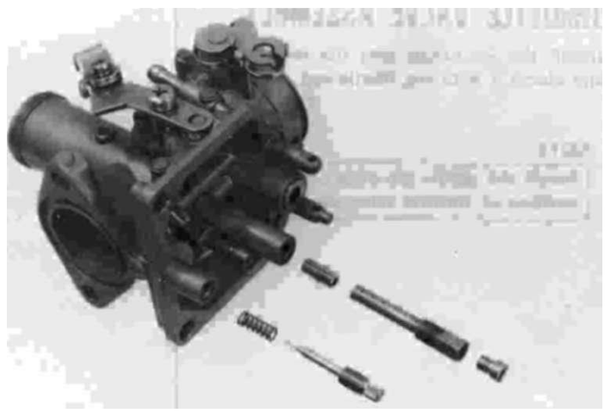
The slow air jet cannot be removed since it is a tight press fit in the carburetor.

Remove the pilot screw.

Pilot screw adjustment, see page 4-8.



Blow open all jets and body opening with compressed air.

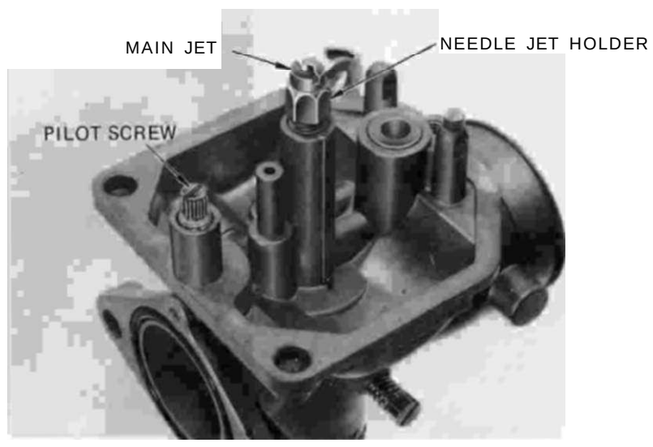


- **ASSEMBLY**

Install the pilot screw, the needle jet holder and the main jet.

NOTE

Do not damage the jets at time of assembly.



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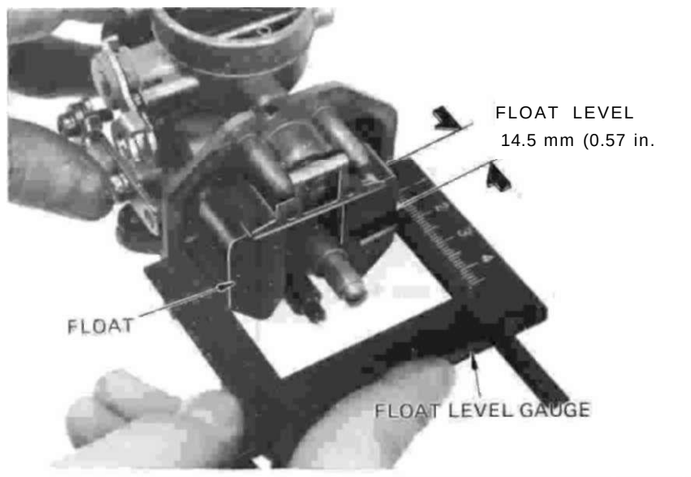
FLOAT LEVEL ADJUSTMENT

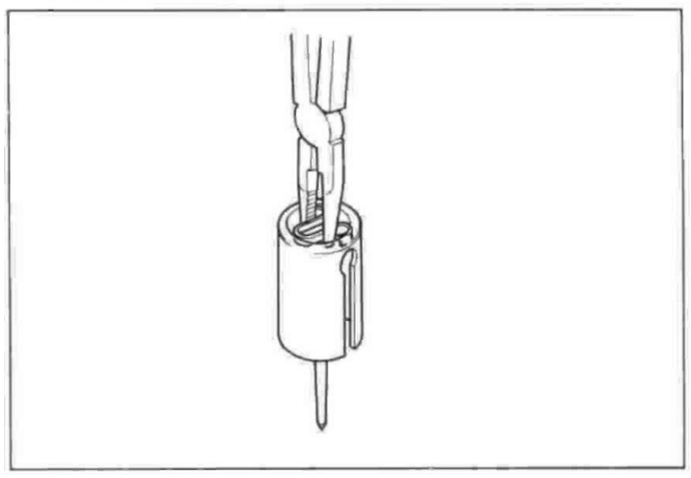
To adjust the float level, bend the float arm carefully until the float tip just contacts the float valve.

FLOAT LEVEL: 14.5 mm (0.57 in.)



THROTTLE VALVE ASSEMBLY

Install the jet needle into the throttle valve and clamp it with the needle cap plate.



NOTE

Install the needle cap plate on the lower position of throttle valve completely.

Install the throttle cable and spring.
Install the throttle valve.

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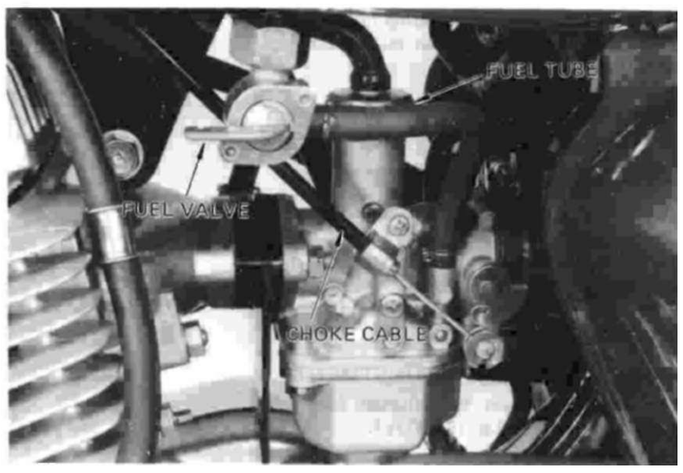
Install throttle valve with the throttle valve groove aligned with the throttle stop screw.

CARBURETOR INSTALLATION

Carburetor installation is the reverse of the removal.

NOTE

- Clamp the choke cable end on the cable setting plate.
- After assembly, perform the following adjustments.
  Throttle grip free play (See page 3.7)
  Idle speed adjustment (See page 3.8)



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ADJUSTMENT

- ADJUST THE IDLE SPEED AFTER ASSEMBLING:

NOTE

The carburetor is factory pre-set and pilot adjustment is not necessary except after overhauling.

Before installing the carburetor, turn the pilot screw 2 turn out from seated lightly position.

CAUTION

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

Warm up the engine to operating temperature. Stop and go driving for ten minutes should be sufficient.
Attach a tachometer.
Adjust the idle speed with the throttle stop screw.

IDLE SPEED: 1.200 ± 100 rpm

Screw the pilot screw in gradually until the engine stops.
Turn the pilot screw 1 turn out from this position.
Start the engine and readjust the idle speed if necessary.

- HIGH ALTITUDE ADJUSTMENT

The carburetor must be adjusted for high altitude riding 2,000 m (6,500 ft.)

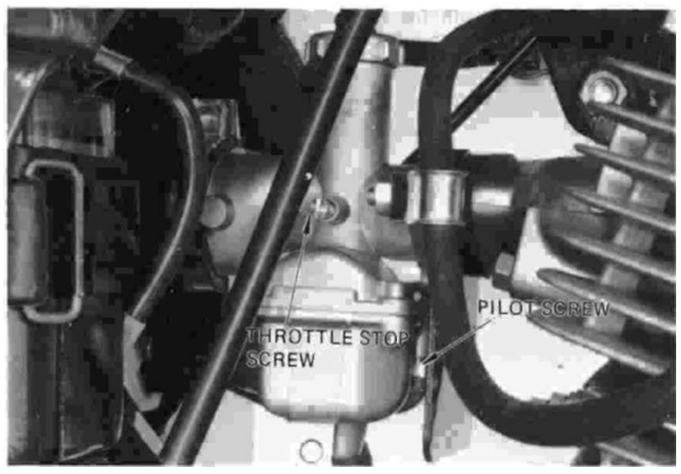
STANDARD SETTING:
2,000 m (6,500 ft.) max.
HIGH ALTITUDE SETTING:
1.500 m (5,000 ft.) min.

High altitude carburetor adjustment is done as follows:

1. Turn the pilot screw clockwise 1/4 turn from the factory pre-set position.
2. Start the engine and adjust the idle speed to 1,200 ± 100 rpm with the throttle stop screw.

NOTE

Adjust the idle speed at high altitude to ensure proper high altitude operation.



CAUTION

Sustained operation at lower altintde than 1,500 m (5,000 ft.) with high altitude setting position, may cause engine overheating and engine damage. Return the pilot screw to the factor)' pre-set position and readjust the idle speed to 1,200 ± J 00 rpm.

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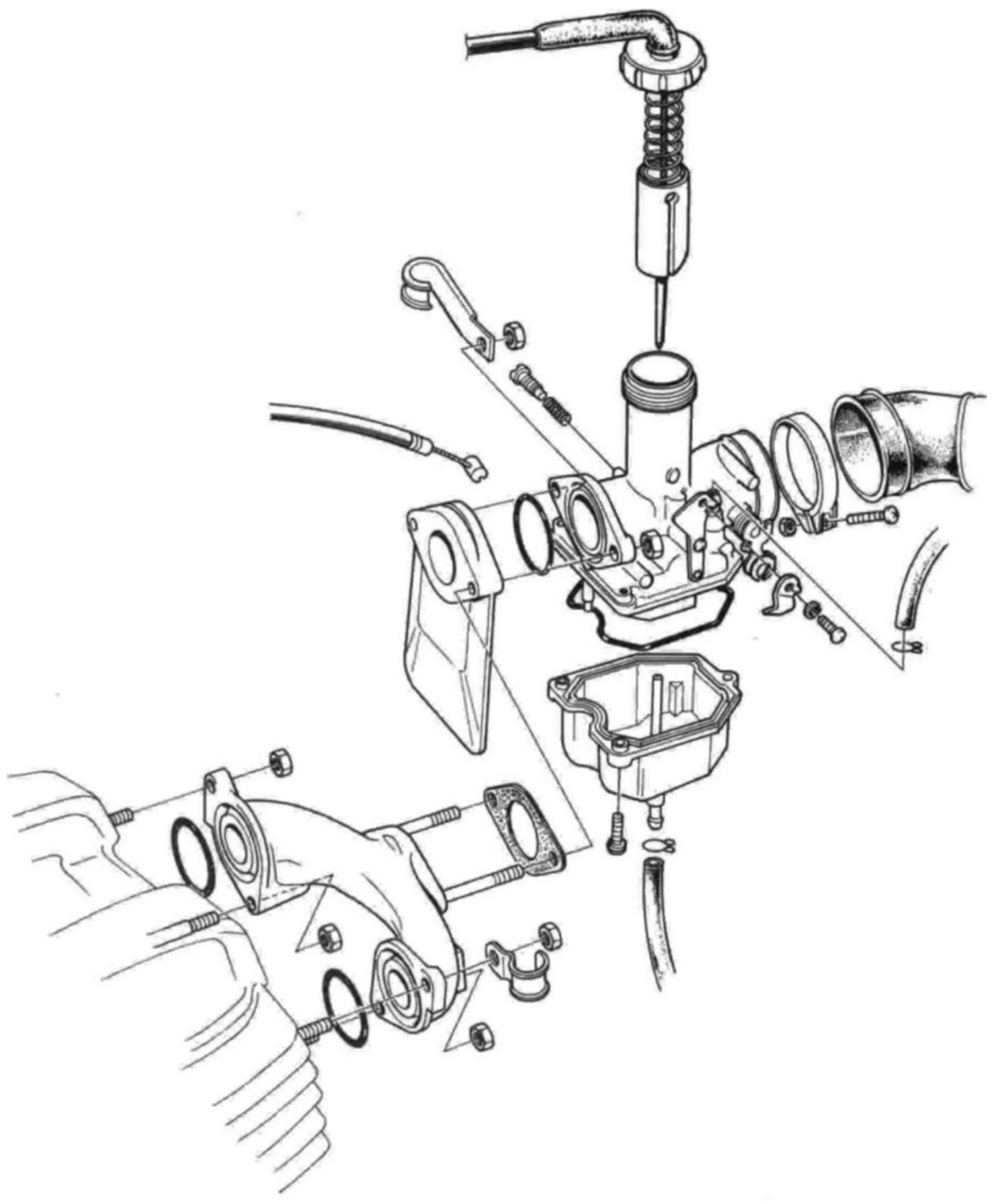


HONDA
CM185T

5. ENGINE REMOVAL AND INSTALLATION

SERVICE INFORMATION	**5-1**
ENGINE REMOVAL	**5-2**
ENGINE INSTALLATION	**5-6**

SERVICE INFORMATION

- **WORKING PRACTICE**

A jack or other adjustable support is required to support and maneuver the engine.
The carburetor assy, may be detached to speed engine removal.
Works requiring engine removal:

Cylinder head and valves.....Section 6
Cylinder and piston.....Section 7
Transmission and crankshaft.....Section 10

SPECIFICATIONS

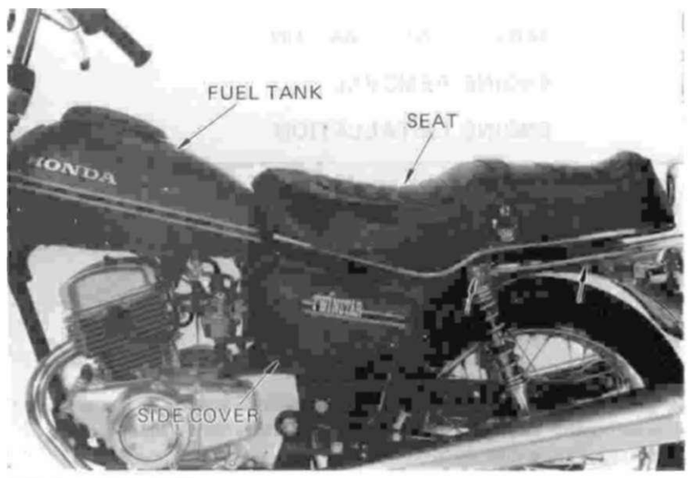
Engine weight:	39.8 kg (87.8 lb) at dry
Oil capacity:	1.5 lit (1.6 U.S. qt.)
	1.4 lit (1.5 U.S. qt.) at draining

TORQUES

Engine hanger	
8 mm bolts:	2.0-2.5 kg-m (14.5-18.1 ft-lb.)
10 mm bolts:	5.5-7.0 kg-m (39.8-50.8 ft-lb.)
Drain plug:	3.0-5.0 kg-m (21.7-36.2 ft-lb.)
Foot rest bolts:	2.0-2.5 kg-m (14.5-18.1 ft-lb.)
Kick starter pedal bolt:	1.0-1.5 kg-m (7.2-10.8 ft-lb.)
Gear shift pedal bolt:	0.8-1.2 kg-m (5.8-9.7 ft-lb.)

ENGINE REMOVAL

Remove the drain plug to drain the engine oil.
Remove the right and left side covers.
Remove the seat and fuel tank.



Remove the right and left mufflers
Disconnect the breather tube and remove the plug cap.

Remove the starter magnetic switch and the turn signal relay.
Disconnect the stop switch wires and the battery cords.
Remove the battery.

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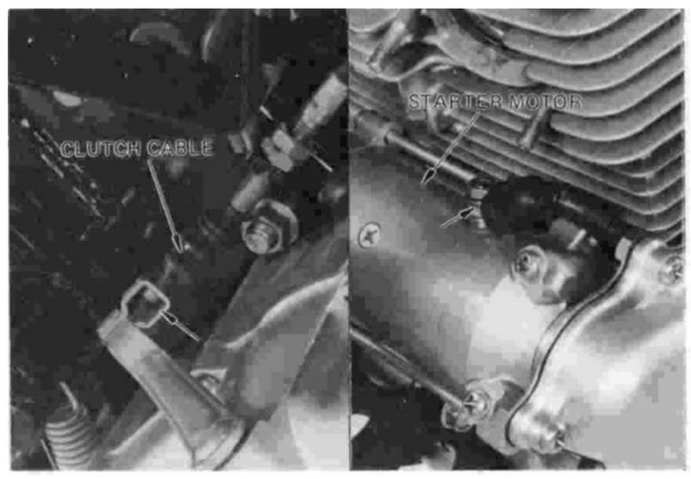
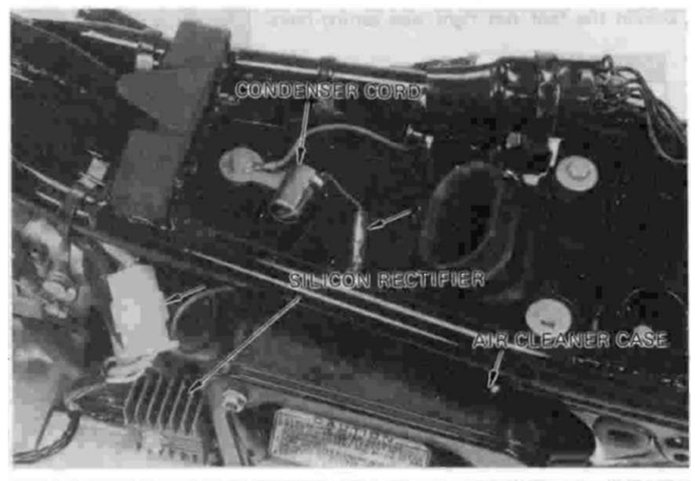
ENGINE REMOVAL AND INSTALLATION

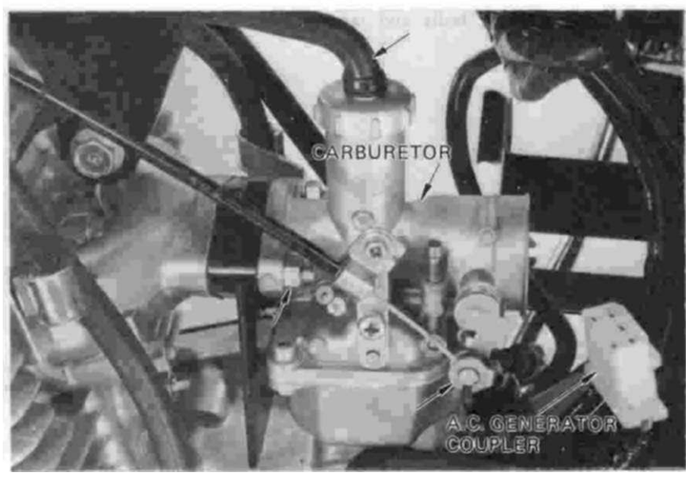
Disconnect the clutch cable at the lower adjuster.
Disconnect the starting motor cable at the starting motor.



Disconnect the coupler of the silicon rectifier and condenser cord.
Loosen the air cleaner tube band and remove the air cleaner case within air cleaner element.



Disconnect the A.C. generator coupler.
Remove the carburetor. (See page 4-3)



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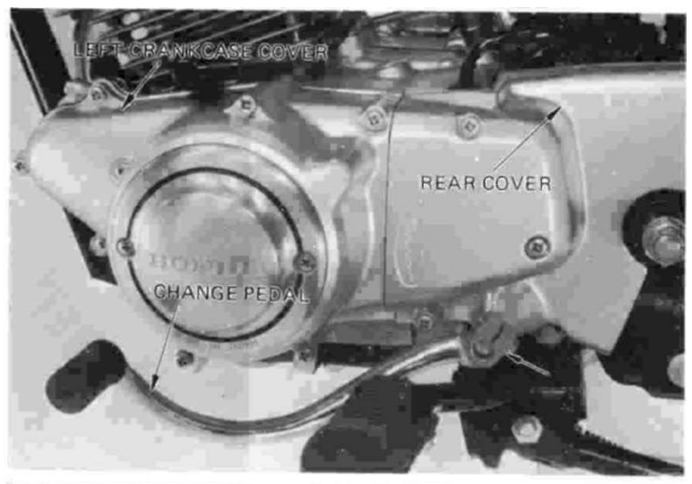
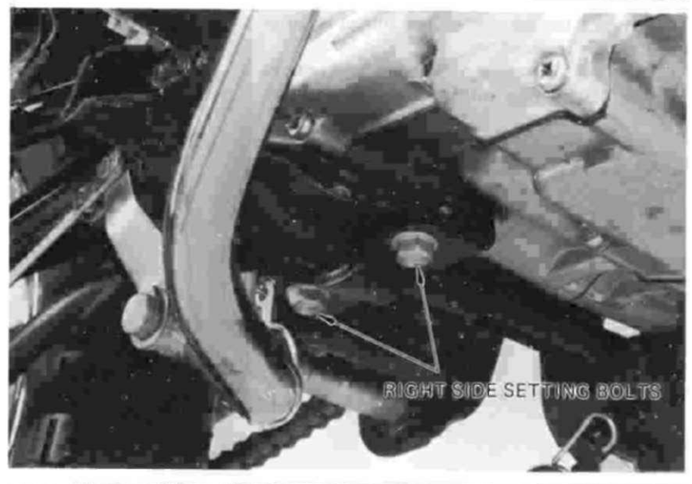
Remove the gear change pedal, the left crankcase and the rear covers.



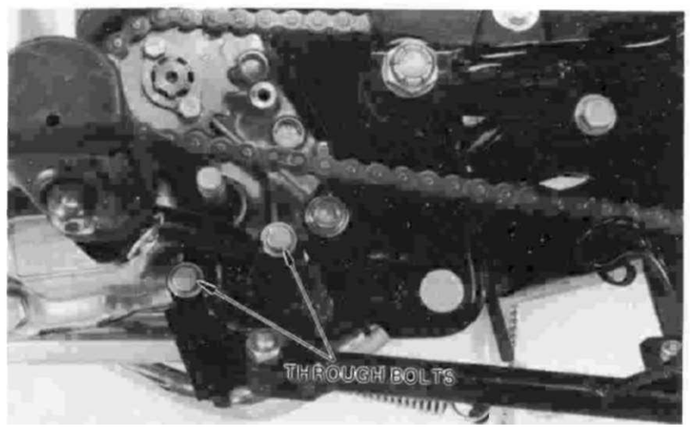
Loosen the foot rest right side setting bolts.

WARNING

Place the frame body on the rigid rack before removing the foot rests.



Remove the through bolts and remove the foot rests.



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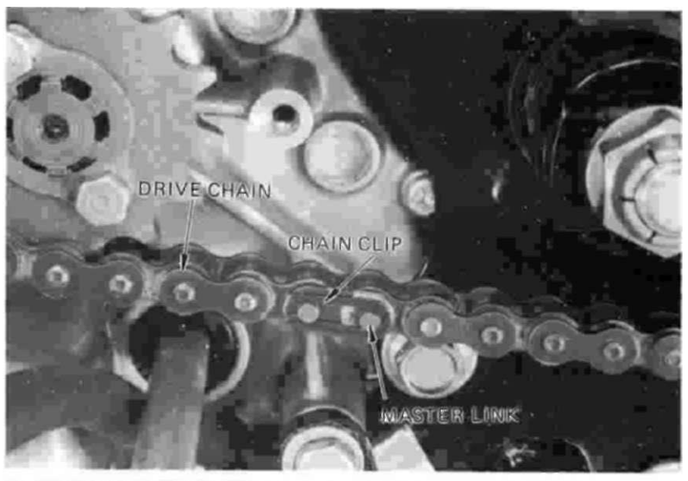
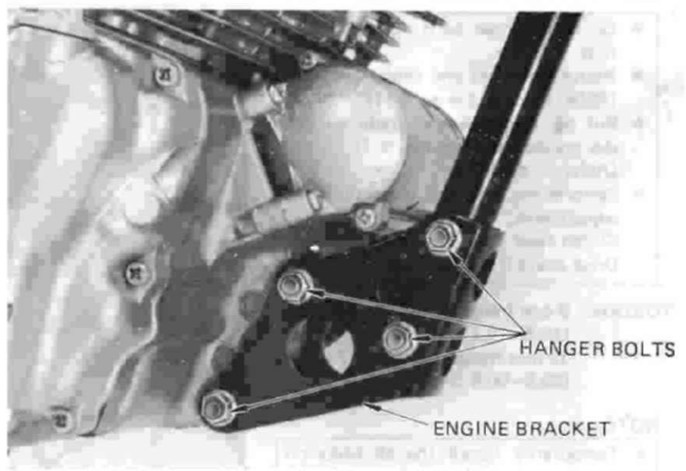
Pry off the drive chain clip and remove the master link.
Remove the drive chain.

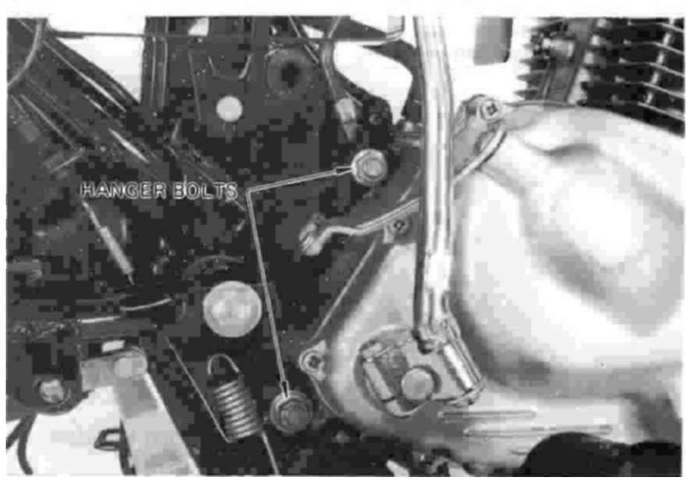


Support the engine with a jack or other adjustable support under the engine.

Remove the four hanger bolts and front engine bracket.



Remove two 10 mm hanger bolts on the frame body.



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Remove the engine upper hanger bolt and remove the engine.

INSTALLATION

The installation sequence is the reverse of removal.

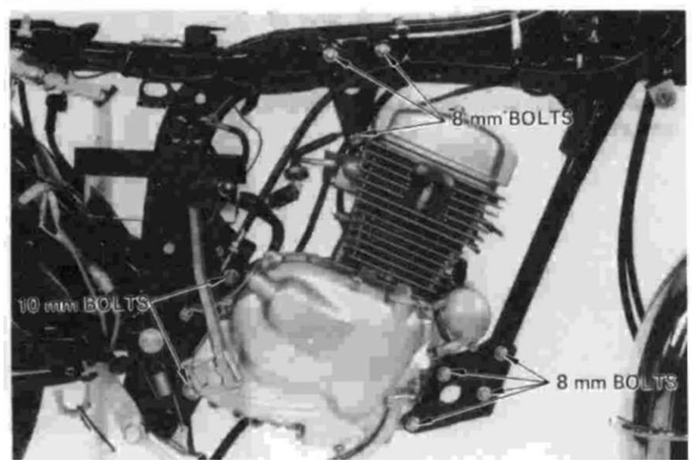
NOTE

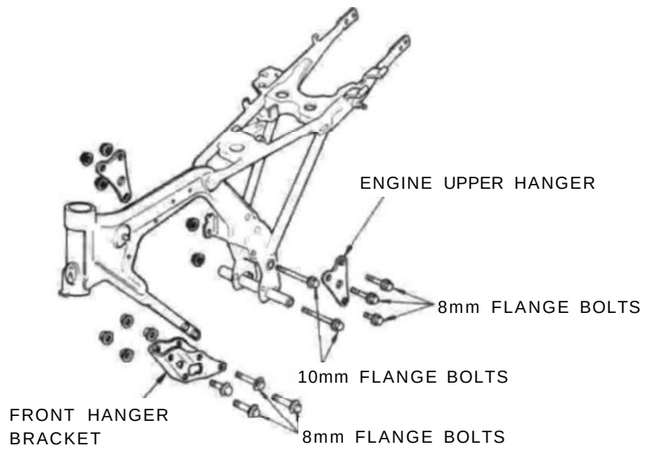
Do not damage parts during installation.
Route the wires and cables properly. (Refer to page 1-9 to 1-11)
Fill the recommended grade oil into the crankcase to proper level. (Refer to page 2-2)
Perform the following inspections and adjustments:
Clutch lever free play (page 3-15)
Drive chain free play (page 3-10)

TORQUE: 8 mm frange bolts 2.0-2.5 kg-m (14.5-18.1 ft-lb.)
10 mm frange bolts 5.5—7.0 kg-m (39.8-50.8 ft-lb.)

NOTE

- Temporarily install the all bolts on the frame, then tighten them securely.
- Install the hanger plates, hanger bracket and hanger bolt as shown.





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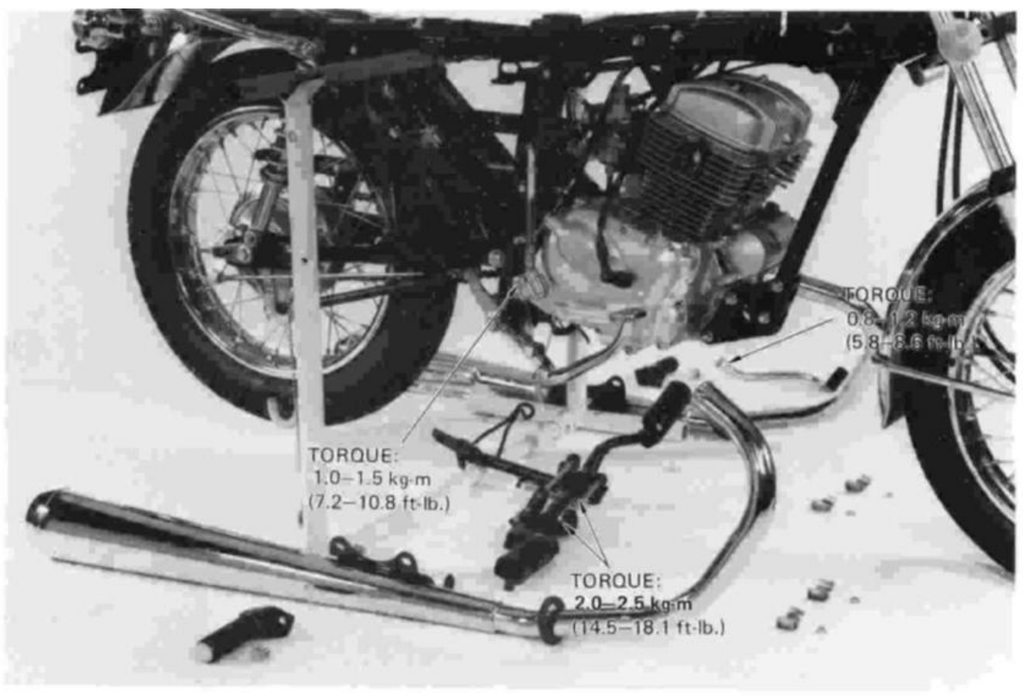

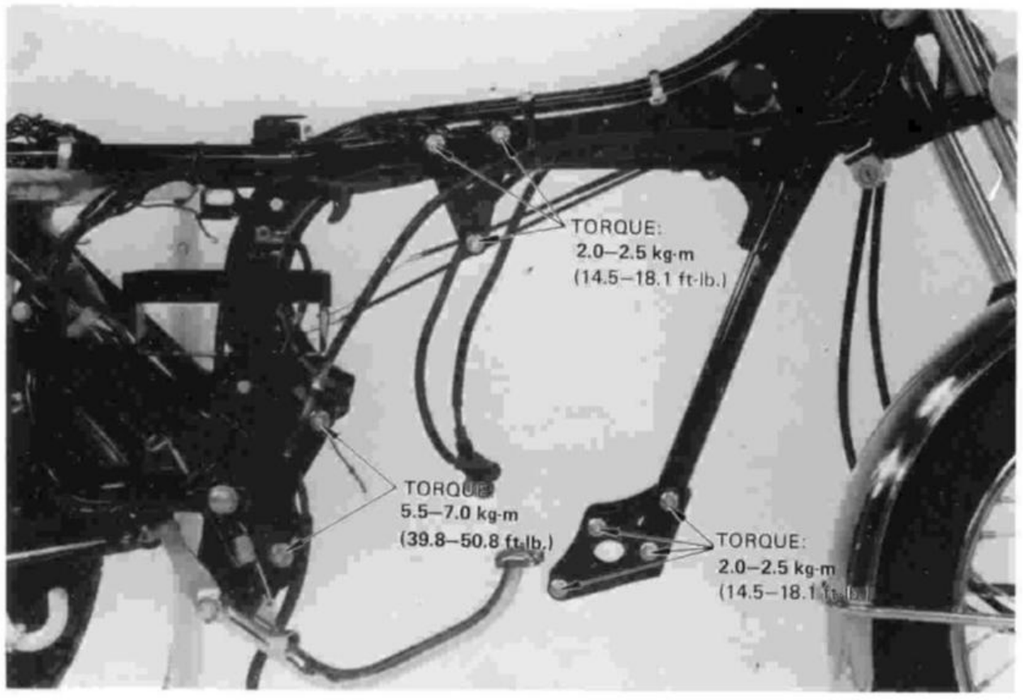

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6. CYLINDER HEAD/ VALVES

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CYLINDER HEAD INSTALLATION	6-17
CAMSHAFT AND ROCKER ARM INSTALLATION	6-18

SERVICE INFORMATION

• WORKING PRACTICE

Camshaft lubricating oil is fed to the cylinder head through an oil passage in the cylinder head.
Be sure this oil passage is not clogged and O-rings and dowel pins are in place before installing the cylinder head.
Pour clean engine oil into the oil sinks of the cylinder head to fully lubricate the cam lobes.

• TOOLS

Special Tool

Valve guide reamer:	Tool No. 07984-0980000

Common Tools

Valve guide remover driver:	Tool No. 07742-0010100
Valve guide cutter:	Tool No. 07742-0030100
Valve guide pilot (5.5):	Tool No. 07742-0030200
Valve spring compressor:	Tool No. 07757-0010000

• TORQUES

Cylinder head bolts:	1.0-1.4 kg-m (7.2-10.1 ft-lb.)
Camshaft holder nuts:	1.6-2.0 kg-m (11.6-14.5 ft-lb.)
Cam sprocket bolts:	1.7-2.3 kg-m (12.3-16.6 ft-lb.)
Cylinder head cover bolt.	0.8-1.2 kg-m (5.8-8.7 ft-lb.)

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• SERVICE DATA

ITEMS		STANDARD	SERVICE LIMIT
Cylinder Compression (COLD)		12.0±2 kg/cm² (170±28 psi)	
Camshaft	Intake valve opens	–3° (B.T.D.C.) at 1mm lift, 45° (B.T.D.C.) at 0 lift	
	closes	34° (A.B.D.C.) at 1mm lift, 97° (A.T.D.C.) at 0 lift	
	Exhaust valve opens	33° (B.B.D.C.) at 1mm lift, 94° (B.B.D.C.) at 0 lift	
	closes	–4° (A.T.D.C.) at 1mm lift, 49° (A.T.D.C.) at 0 lift	
	Cam lift IN :	27.695 mm (1.0904 in.)	26.6 mm (1.0472 in.)
	EX:	27.522 mm (1.0835 in.)	26.5 mm (1.0433 in.)
	Journal O.D.	19.967–19.980 mm (0.7861–0.7866 in.)	19.92 mm (0.7843 in.)
	Bend	————	0.05 mm (0.0020 in.)
Camshaft Bushing	I.D.	20.063–20.083 (0.7899–0.7907 in.)	20.20 mm (0.7965 in.)
Cylinder Head	Height	72.75–72.85 mm (2.8642–2.8681 in.)	72.6 mm (2.8583 in.)
	Warpage	Max. 0.05 mm (0.0020 in.)	0.1 mm (0.0039 in.)
	Valve seat width IN/EX	1.0 mm (0.0394 in.)	1.5 mm (0.0590 in.)
Rocker Arm and Shaft	Arm I.D.	10.000–10.015 mm (0.3937–0.3943 in.)	10.1 mm (0.3976 in.)
	Shaft O.D.	9.978–9.987 mm (0.3928–0.3932 in.)	9.17 mm (0.3610 in.)
Valve and Valve Guide	Valve stem O.D. IN :	5.450–5.465 mm (0.2146–0.2152 in.)	5.42 mm (0.2134 in.)
	EX:	5.430–5.445 mm (0.2138–0.2144 in.)	5.40 mm (0.2126 in.)
	Valve face width IN/EX	1.1–1.5 mm (0.0433–0.0591 in.)	1.8 mm (0.0709 in.)
	Valve guide I.D. IN/EX	5.475–5.485 mm (0.2156–0.2159 in.)	5.50 mm (0.2165 in.)
	Valve-to-guide clearance IN :	0.010–0.035 mm (0.0004–0.0014 in.)	0.08 mm (0.0031 in.)
	EX:	0.030–0.055 mm (0.0012–0.0022 in.)	0.10 mm (0.0039 in.)
Valve Spring Free length	Outer	36.45 mm (1.4350 in.)	35.3 mm (1.3898 in.)
	Inner	29.9 mm (1.1772 in.)	29.0 mm (1.1417 in.)
Valve Clearance	IN/EX	0.05 mm (0.002 in.)	

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TROUBLESHOOTING

Performance problems related to the cylinder head can usually be diagnosed by a compression test, or noise problems which can be traced to the top end with a sounding rod or stethoscope.

Low Compression or Uneven Compression (under 10 kg/cm², 142 psi):
1. Valve troubles
   - Incorrect valve adjustment
   - Burned or bent valves
   - Incorrect valve timing
   - Sticking valve
   - Broken valve spring
   - Weak valve spring
   - Improper valve seating
2. Cylinder head troubles
   - Leaking or damaged head gasket
   - Warped or cracked cylinder head
   - Worn piston ring(s) and/or cylinder

Compression Too High (over 14 kg/cm², 199 psi):
1. Excessive carbon deposits on the combustion chamber or piston

Excessive Noise:
1. Incorrect valve adjustment
2. Sticking valve or broken valve spring
3. Damaged rocker arm or camshaft
4. Worn or damaged camshaft sprocket
5. Slacken or worn cam chain

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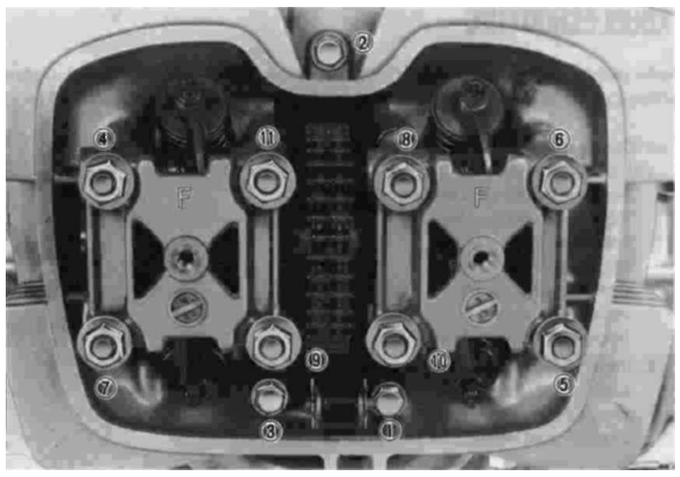
ROCKER ARM/ CAMSHAFT REMOVAL

Remove the generator cover and the cylinder head cover and unscrew the camshaft holder nuts.

CAUTION

Perform this operation while the engine is cold to prevent warpage due to heat. Loosen the cylinder head hold-down holts in the sequence shown in steps 2-3.

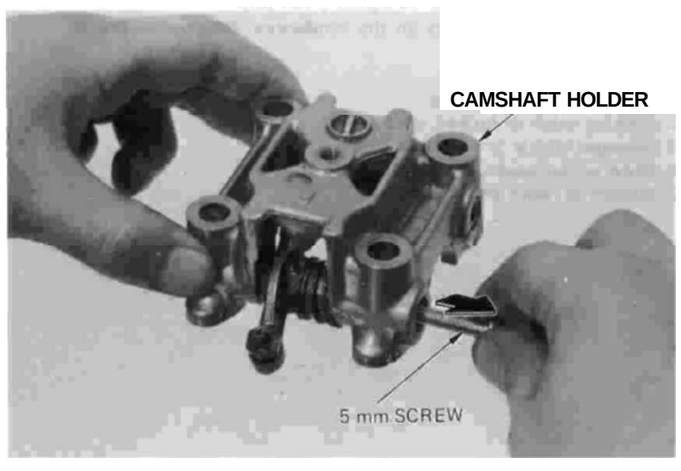


Remove the camshaft holders.

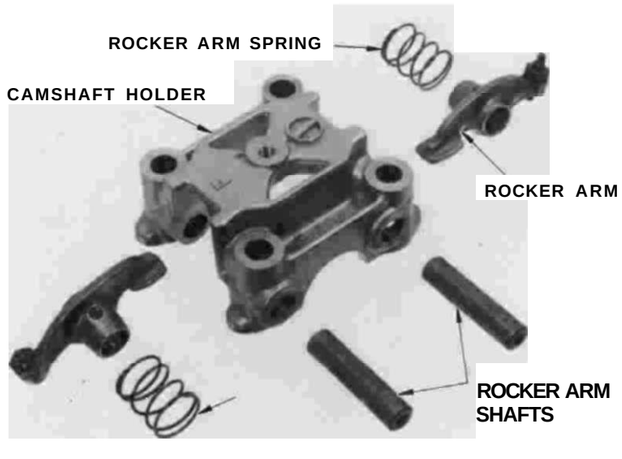
Pull off the rocker arm shafts after tightening the 5 mm screw into them.

NOTE

Mark each part to insure original assembly.



Remove the rocker arms and the rocker arm springs.



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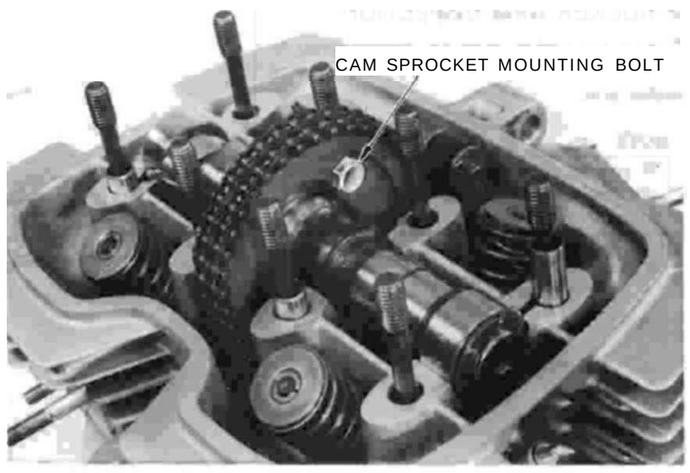
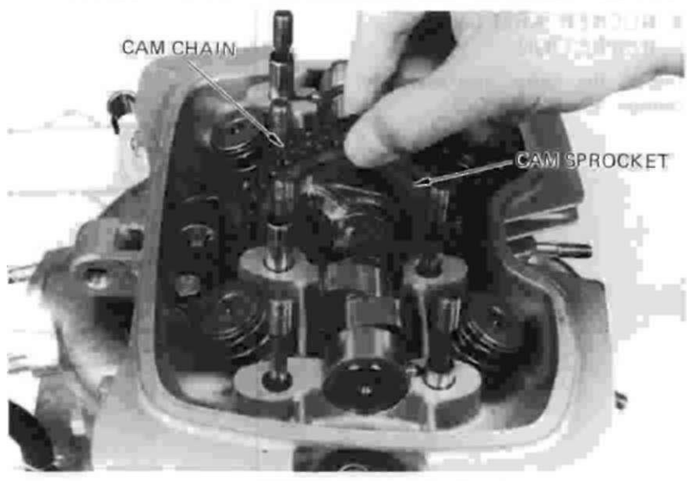
Unscrew the cam sprocket mounting bolt. Turn the rotor counterclockwise, and remove the other bolt.

NOTE

Do not drop the mounting bolts into the cylinder,



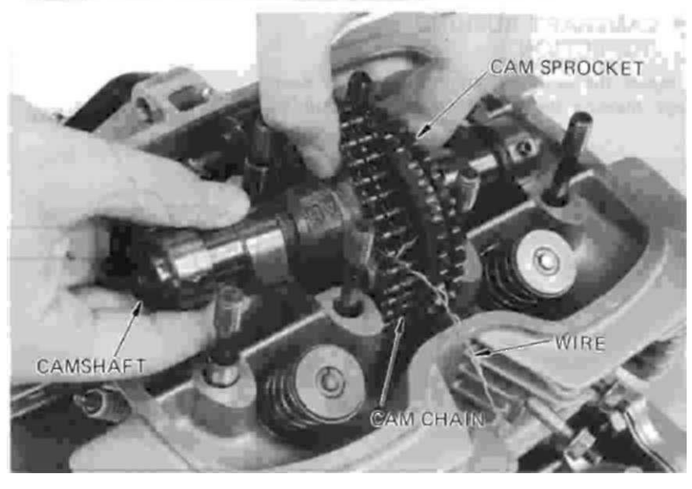
Remove the cam chain from the cam sprocket and place it at the right side of cam sprocket.



Pull the camshaft out from right side while holding cam sprocket and cam chain.

NOTE

Suspend the cam chain with a piece of wire to prevent it from falling into the cylinder.



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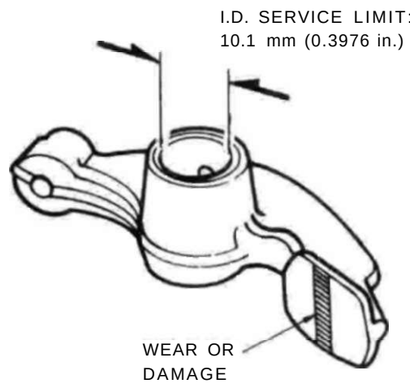
• ROCKER ARM INSPECTION

Inspect the rocker arms for damage, wear or clogged oil holes. Measure the I.D. of each rocker arm.

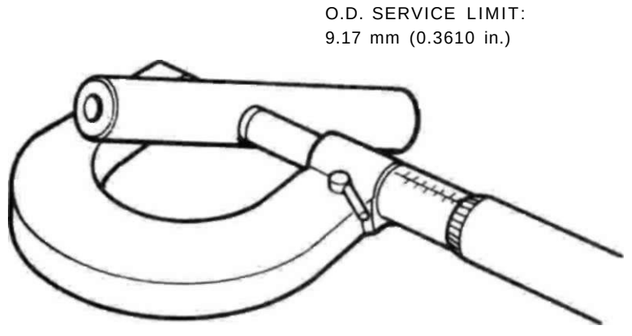
NOTE

If rocker arms require servicing or replacement, inspect the camshaft lobes for scoring, chipping, or flat spots.



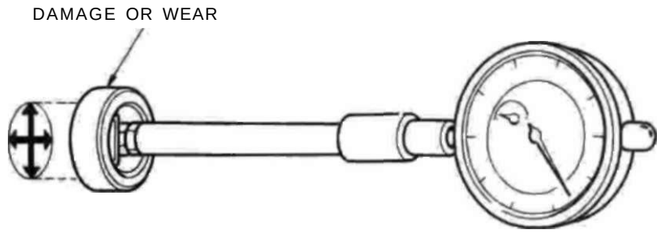
• ROCKER ARM SHAFT INSPECTION

Inspect the rocker arm shafts for wear or damage. Measure the O.D.



• CAMSHAFT BUSHING INSPECTION

Inspect the camshaft bushing for wear or damage. Measure the I.D. of the camshaft bushing.



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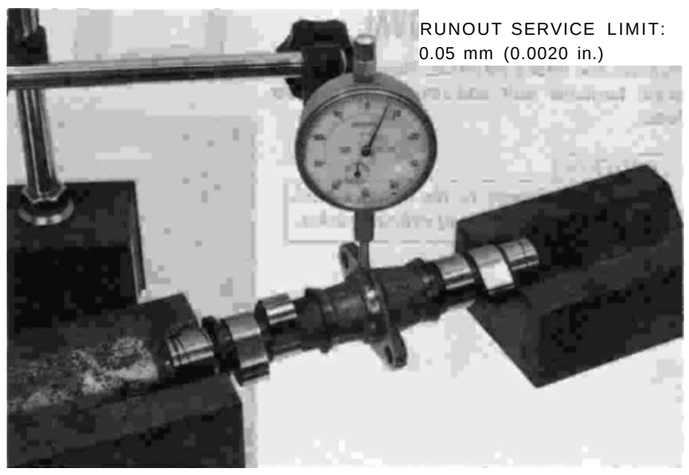
CYLINDER HEAD/VALVES

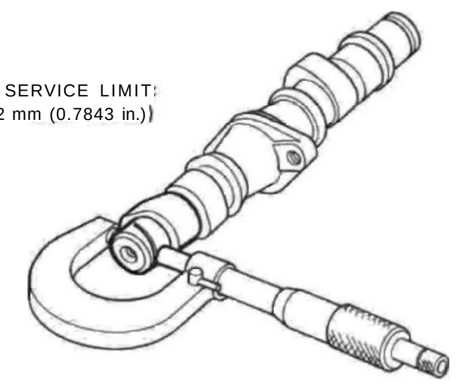
• CAMSHAFT INSPECTION

Check the camshaft runout with a dial indicator.
Support both ends of the camshaft in V-blocks.
Take 1/2 of total indicator reading.



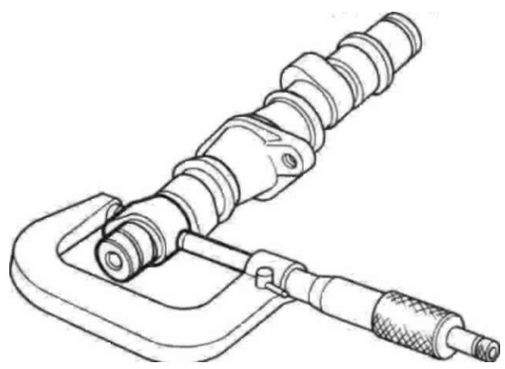
RUNOUT SERVICE LIMIT:
0.05 mm (0.0020 in.)

Inspect the camshaft journal for wear or damage. Measure the O.D. of camshaft journal.



O.D. SERVICE LIMIT:
19.92 mm (0.7843 in.)

Inspect each cam lobe for wear or damage. Measure the cam lift with the micrometer.



CAM LIFT SERVICE LIMIT:
IN: 26.6 mm (1.0472 in.)
EX'. 26.5 mm (1.0433 in.)

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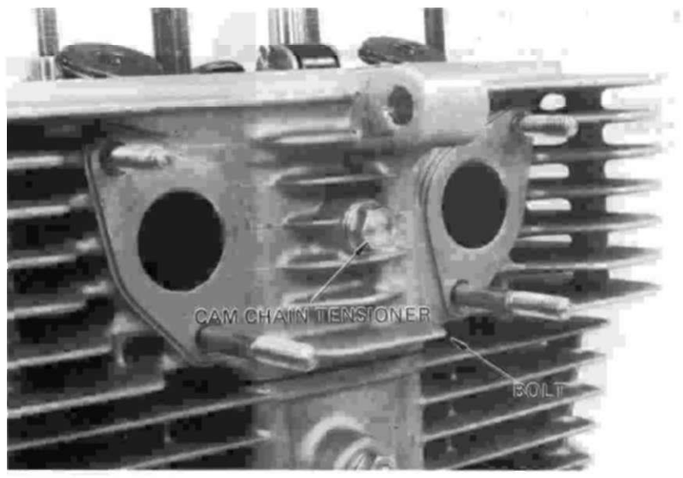
CYLINDER HEAD REMOVAL

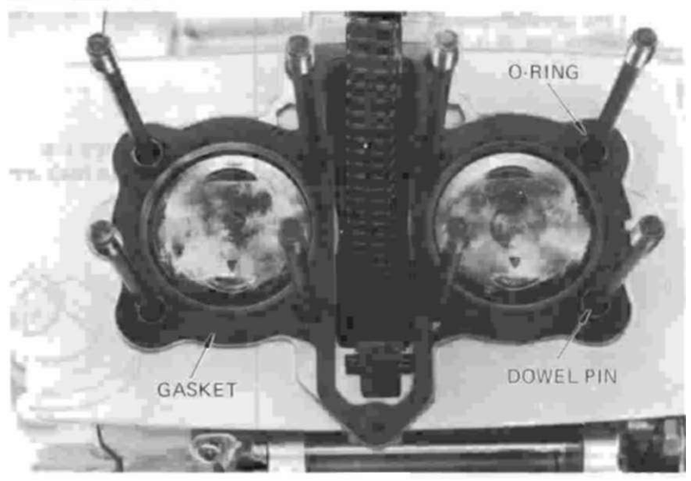
Remove the intake manifold. Remove the cam chain tensioner bolt and remove the cylinder head.

CAUTION

To prevent damage to the cylinder head, pry only at the cutout of cylinder gasket.



Remove the cylinder gasket, dowel pins and O-rings.

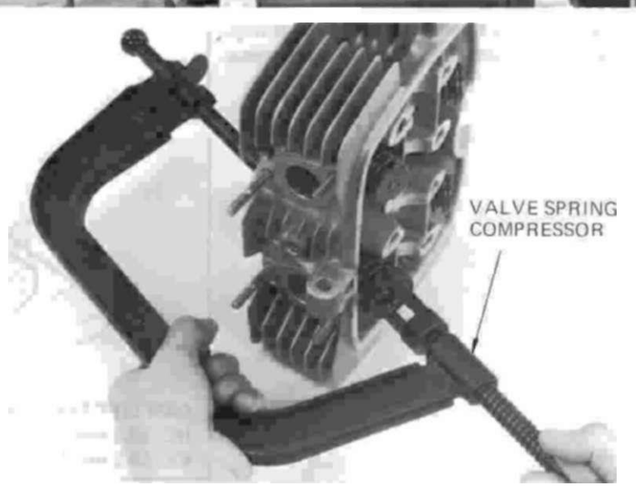


CYLINDER HEAD DISASSEMBLY

Remove the valve spring cotters, retainers, springs and valves.

NOTE

- Do not compress the valve springs more than necessary to remove the valve spring cotters.
- Mark all disassembled parts to insure original assembly.



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Remove carbon deposits from the combustion chamber.

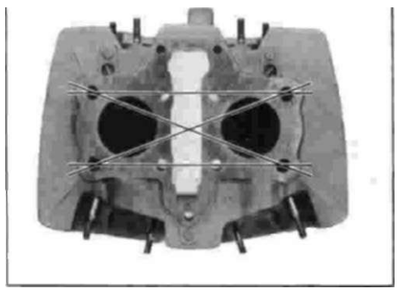
Clean off the head gasket surfaces.

NOTE
Avoid damaging the gasket surfaces. Gasket will come off easier if soaked in solvent.

• CYLINDER HEAD INSPECTION

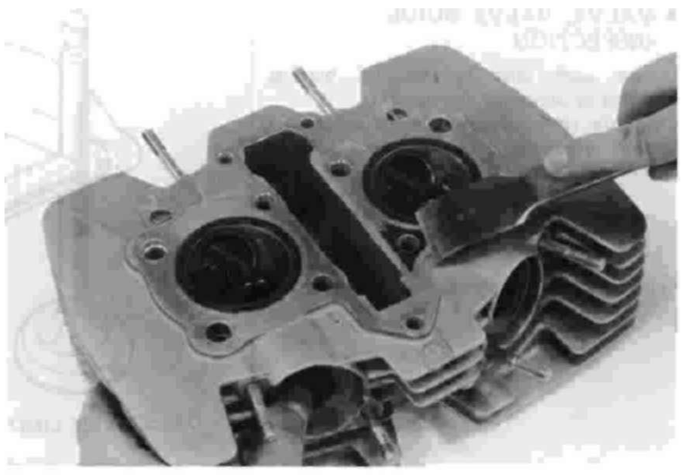
Check the spark plug hole and valve areas for cracks.
Check the cylinder head for warpage with a straight edge and a feeler gauge.

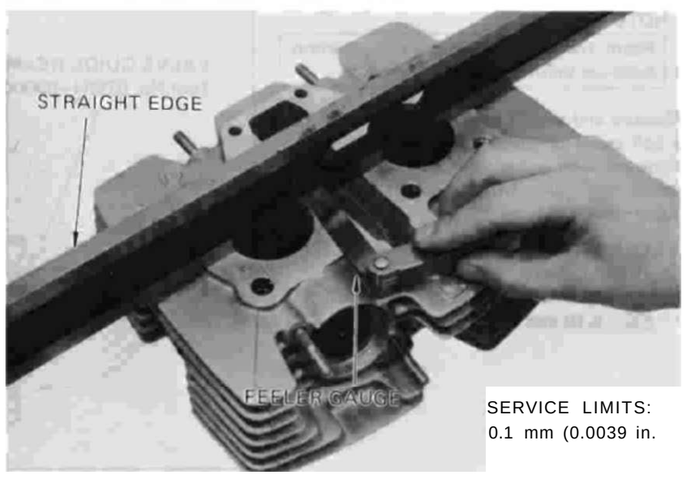
NOTE
Check for warpage in an X pattern.



Measure the cylinder head height.

CYLINDER HEAD HEIGHT
SERVICE LIMIT: 72.6 mm (2.8583 in.)

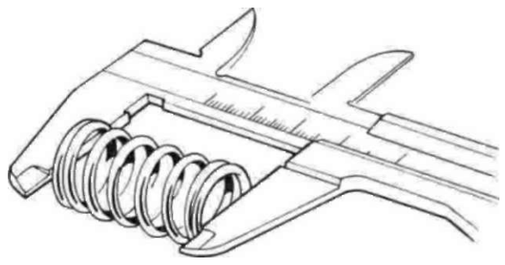




SERVICE LIMITS:
0.1 mm (0.0039 in.

• VALVE SPRING FREE LENGTH INSPECTION

Measure the free length of the inner and outer valve springs.



SERVICE LIMITS:
Inner spring: 29.0 mm (1.1417 in.)
Outer spring: 35.3 mm (1.3898 in.)

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• VALVE, VALVE GUIDE INSPECTION

Inspect each valve for bending, burning, scratches or abnormal stem wear.
Check the valve movement in the guide.
Measure and record each valve stem O.D.

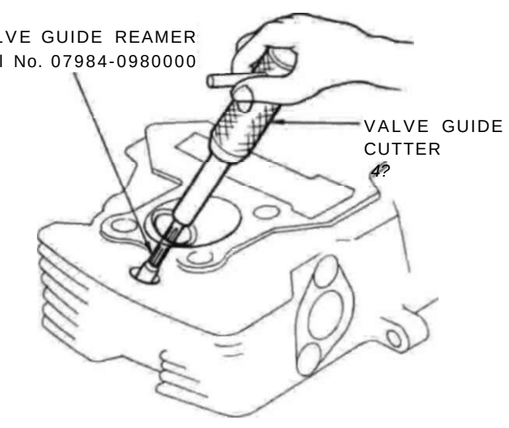
O.D. SERVICE LIMIT: **IN: 5.42 mm (0.2134 in.)**
EX: 5.40 mm (0.2126 in.)

NOTE

Ream the guides to remove any carbon build-up before checking clearance.

Measure and record each valve guide I.D. using a ball gauge or inside micrometer.
Subtract each valve stem O.D. from the corresponding guide I.D. to obtain the stem-to-guide clearance.

VALVE STEM-TO-GUIDE CLEARANCE SERVICE LIMIT:
IN: 0.08 mm (0.0031 in.)
EX: 0.10 mm (0.0039 in.)



NOTE

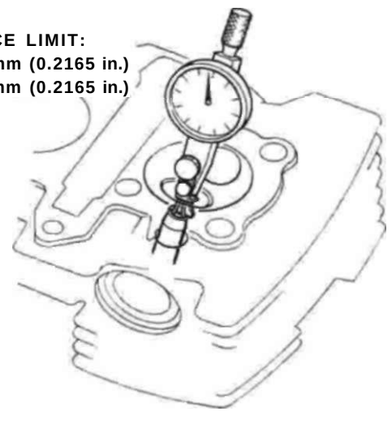
If the stem-to-guide clearance exceeds the service limit, determine if a new guide with standard dimensions would bring the clearance within tolerance. If so, replace any guides as necessary and ream to fit.

If stemto-guide clearance still exceeds the service limits with new guides, replace the valves and guides.

NOTE

Reface valve seats whenever the valve guides are replaced.

I.D. SERVICE LIMIT:
IN: 5.50 mm (0.2165 in.)
EX: 5.50 mm (0.2165 in.)



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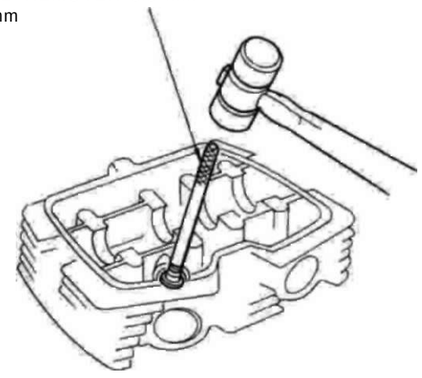
VALVE GUIDE REPLACEMENT

Support the cylinder head and drive out the guide from the valve port.

NOTE

When driving out the valve guide, do not damage the head.

DRIVER AND REMOVER 5.5 mm
PILOT 5.5 mm

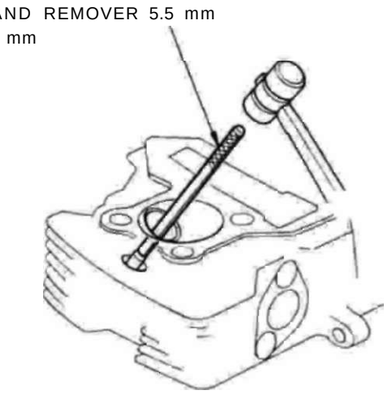


Install a new oversize valve guide from the top of head.

NOTE

Inspect the valve guide for damage.

DRIVER AND REMOVER 5.5 mm
PILOT 5.5 mm



Ream the new guide after installation.

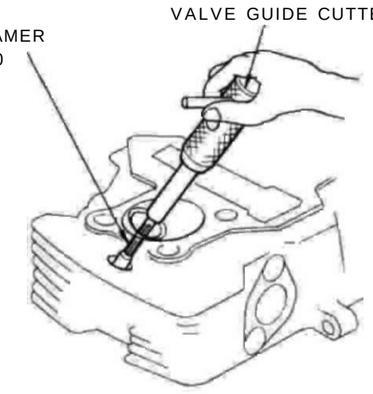
NOTE

Use cutting oil on the reamer during this operation.

Clean the cylinder head thoroughly to remove any metal particles.

VALVE GUIDE CUTTER

VALVE GUIDE REAMER
NO. 07984-0980000



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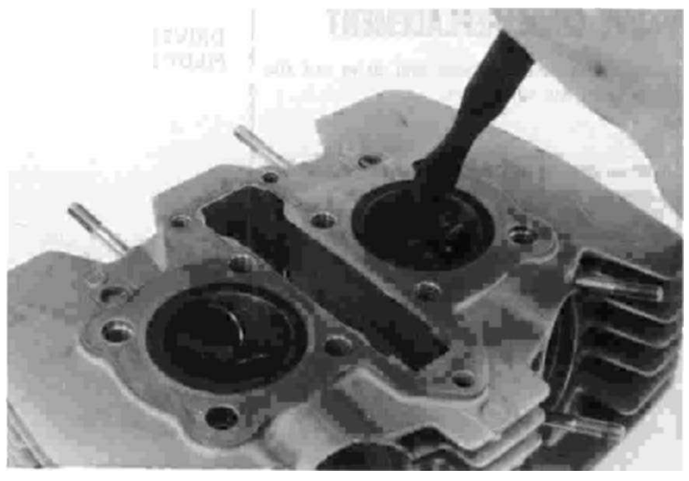
VALVE SEAT INSPECTION/ REFACING

Clean all intake and exhaust valves thoroughly to remove carbon deposits.
Apply a light coat of valve lapping compound to each valve face. Lap each valve and seat using a rubber hose or other hand-lapping tool.



Remove the valve and inspect the face.

Measure the valve seat width.

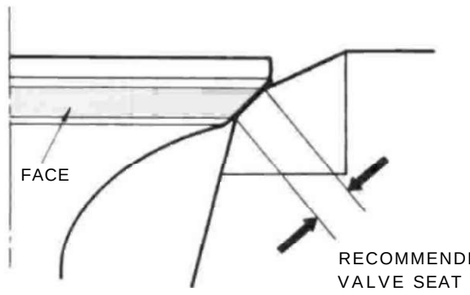
NOTE

The valves cannot be ground. If the face is burned or badly worn, replace the valve.

If the seat is too wide, too narrow, or has low spots, the seat must be ground for good sealing. A power grinder is recommended.

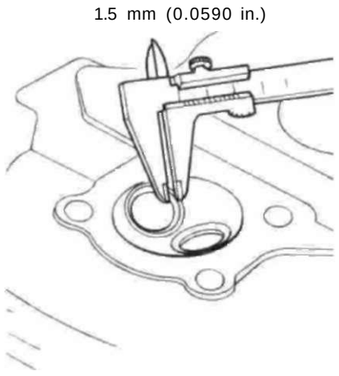
NOTE

Follow the refacer manufacturer's operating instructions.

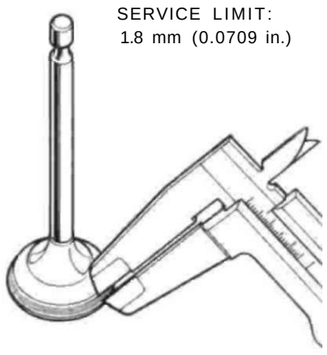


RECOMMENDED VALVE SEAT WIDTH: 1.0 mm (0.0394 in.)

VALVE SEAT WIDTH SERVICE LIMIT: 1.5 mm (0.0590 in.)



VALVE FACE WIDTH SERVICE LIMIT: 1.8 mm (0.0709 in.)



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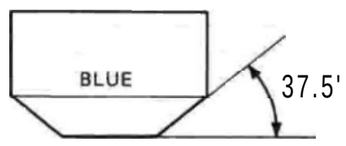
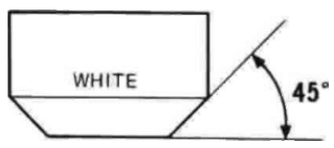
Inspect each cutting stone for cracks.

IN: O.D.:26 mm (1.024 in.)
EX: **O.D.: 23 mm (0.906 in.)**



IN: O.D.:26 mm (1.024 in.)
EX: O.D.: 21 mm (0.827 in.)

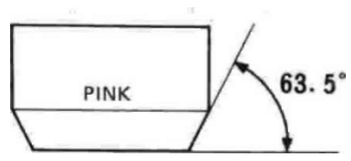


Reface the cutting stone to the correct angle.

NOTE

Each time a stone is removed and re-installed on the grinder, it must be re-faced on the dressing stand.

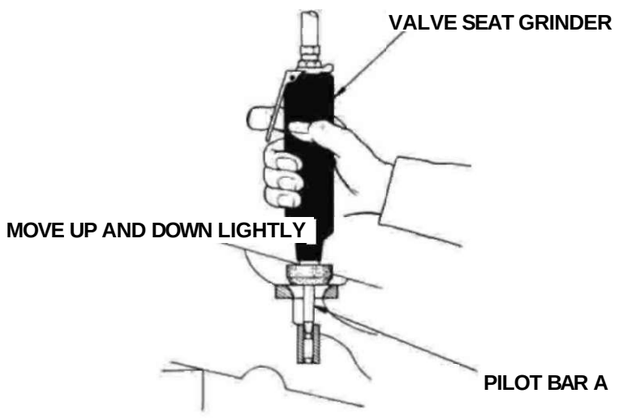
IN: O.D.:26 mm (1.024 in.)
EX: O.D.: 23 mm (0.906 in.)



Lubricate the pilot bar with a thin coat of oil and firmly insert it into the valve guide.

WARNING

Use adequate eye protection when using the valve seat grinder.



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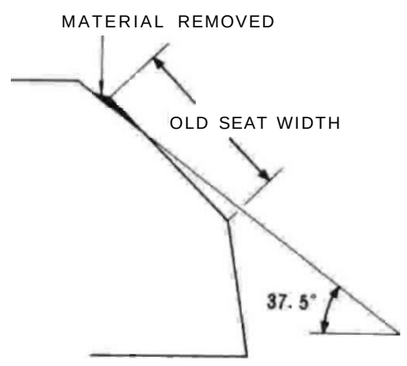
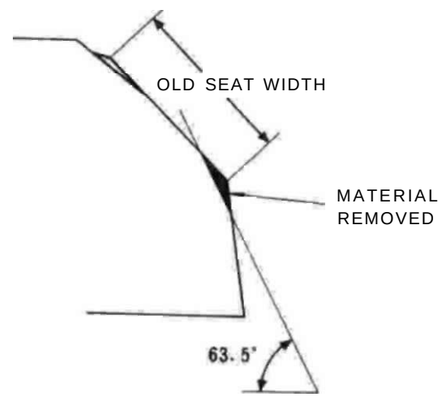
• **TOP CUT**

Using a 37.5" grinding stone, remove 1/4 of the existing valve seat material.
Inspect the area of the removed valve seat.



• **BOTTOM CUT**

Use a 63.5° grinding stone to remove the bottom 1/4 of the old seat.
Remove the grinder and check the ground area.

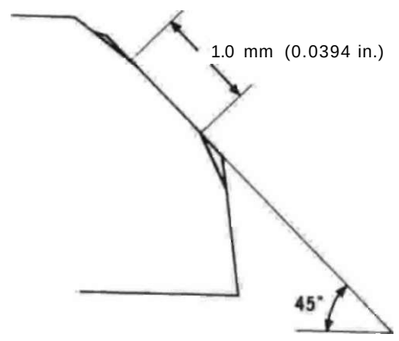


• **FINISH CUT**

With a 45° finishing stone, cut the seat to the proper width.

NOTE

Remove the stone often and inspect the seat for pits.



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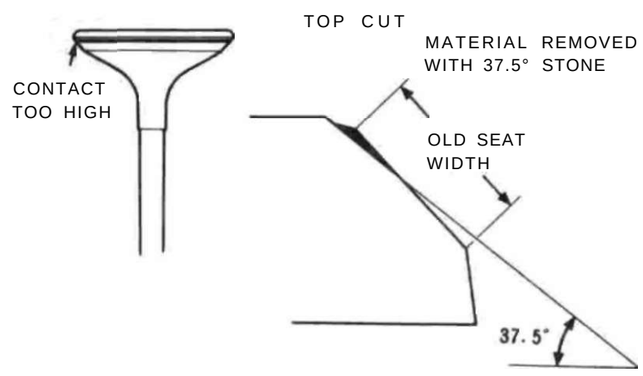
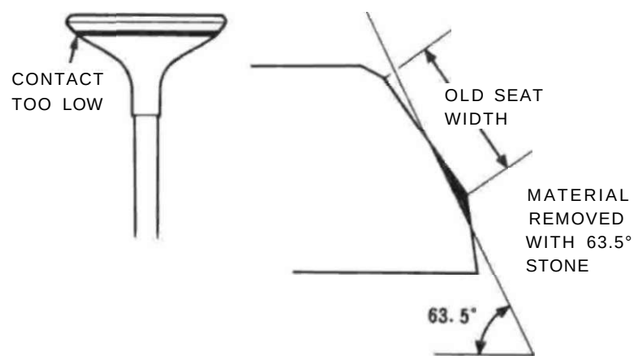
CYLINDER HEAD/VALVES

Check the contact between the valve and valve seat with Prussian Blue.
If the contact area on the valve face is too high, the seat must be lowered, with a 37.5° grinding stone.



If the contact area on the valve face is too low, the seat must be raised, with a 63.5° grinding stone.

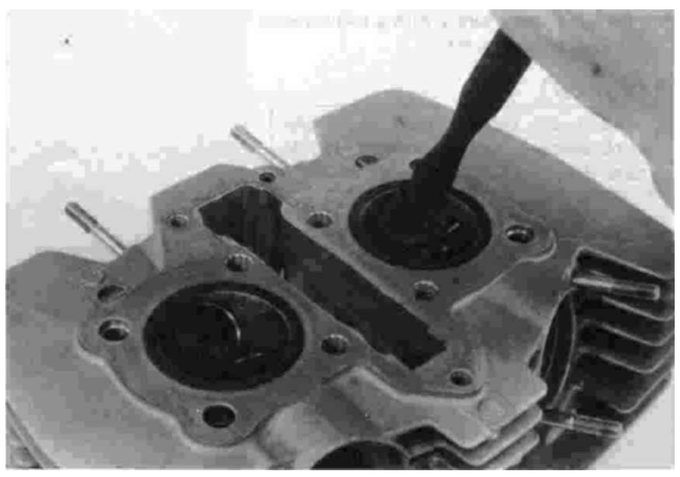
Refinish the seat to 1.0 mm (0.0394 in.) width, with a 45° finishing stone.



After grinding the seat, apply lapping compound to valve face and lap the valve lightly.

CAUTION

Do not allow the lapping compound to enter the valve guide.
After lapping, wash any residual compound off the cylinder head and valve.



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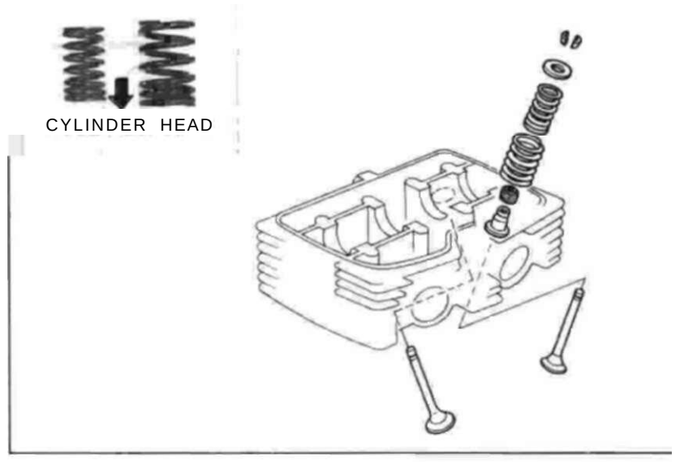
CYLINDER HEAD ASSEMBLY

NOTE

Replace the valve stem seals when disassembling.

CYLINDER HEAD

Lubricate each valve stem with oil and insert the valve into the valve guide.
Install the valve springs and retainers.



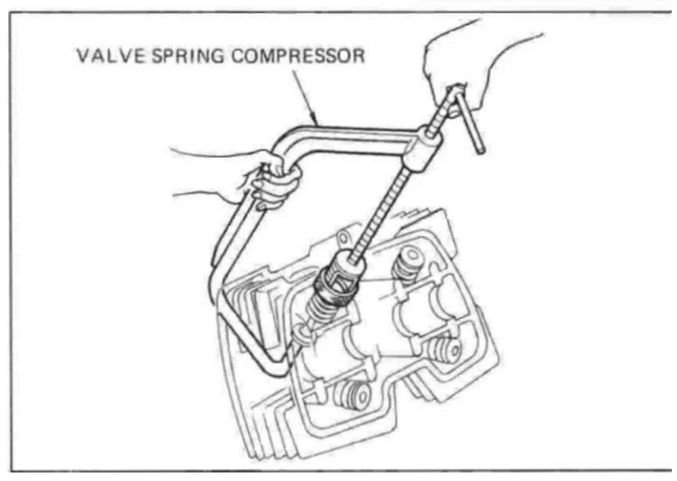
NOTE

Install the valve springs with the tightly wound ends facing the cylinder head.

Install the valve keepers.

NOTE

To prevent loss of tension, do not compress the valve spring more than necessary to install the valve keepers.



Tap the valve stems gently with a soft hammer to firmly set the keepers.

CAUTION

Support the cylinder head above the work bench surface to prevent possible valve damage.

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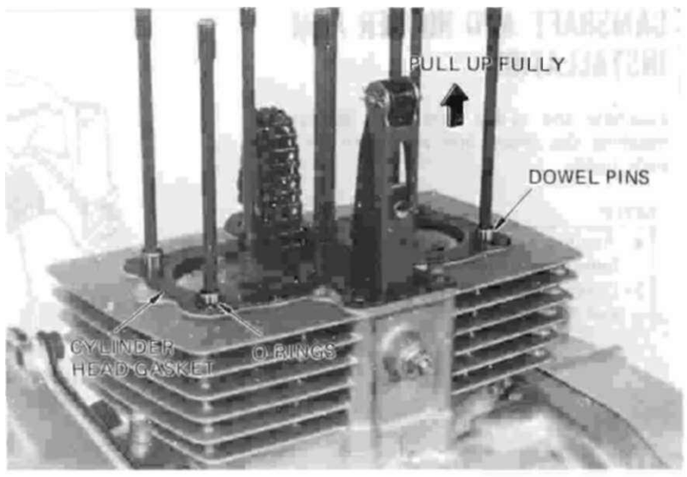
CYLINDER HEAD INSTALLATION

Clean the cylinder head gasket surfaces of any gasket material.

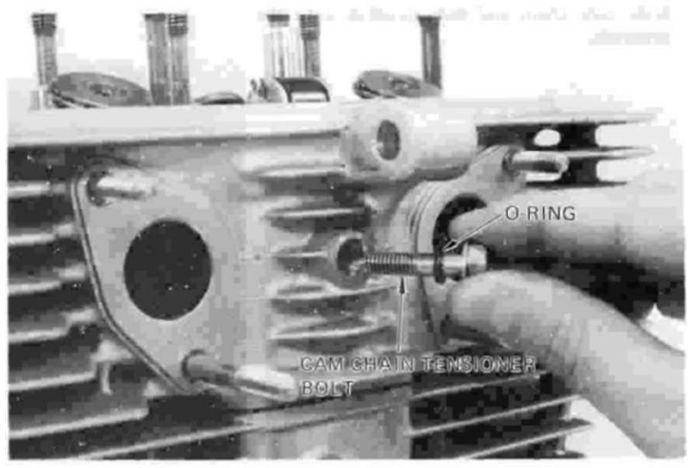
Install the O-rings, dowel pins and a new gasket.

Loosen, the cam chain tensioner lock nut and pull the tensioner up fully. Retighten the lock nut.



Install the cylinder head.

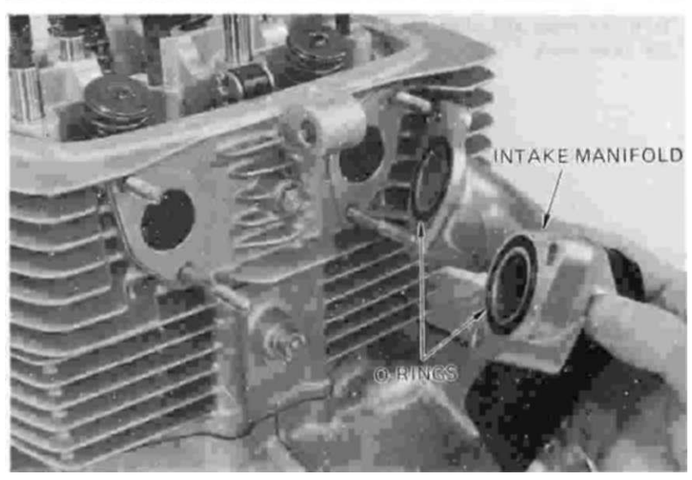
Install the cam chain tensioner bolt with O-ring.



Install the intake manifold with O-rings.

NOTE

Check that the O-rings install the groove of the intake manifold properly.



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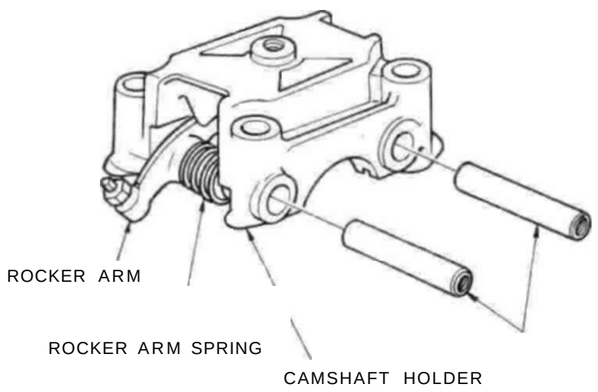
CAMSHAFT AND ROCKER ARM INSTALLATION

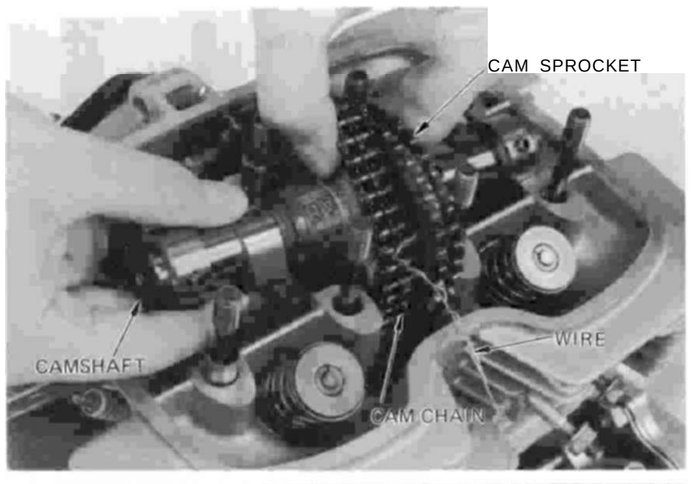
Assemble the rocker arms and springs by installing the rocker arm shaft into the camshaft holder.

NOTE

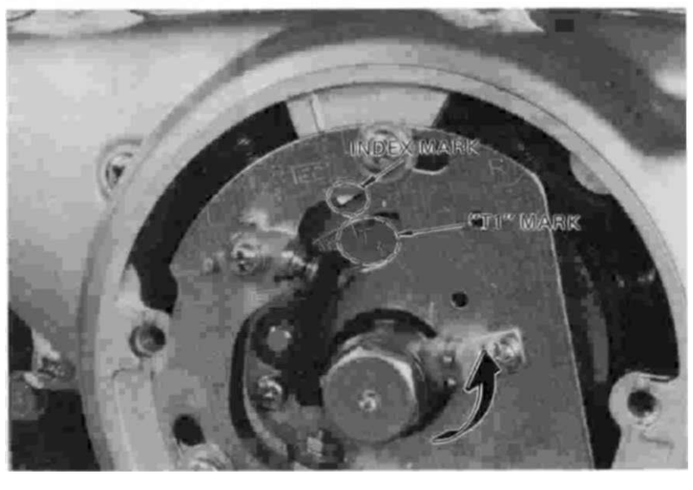
- Apply a thin coat of oil to the shafts before assembly.
- Install each shaft with the threaded end facing out.



Slide cam chain and cam sprocket onto the camshaft.



Turn the rotor and align the "T 1" mark to the index mark.



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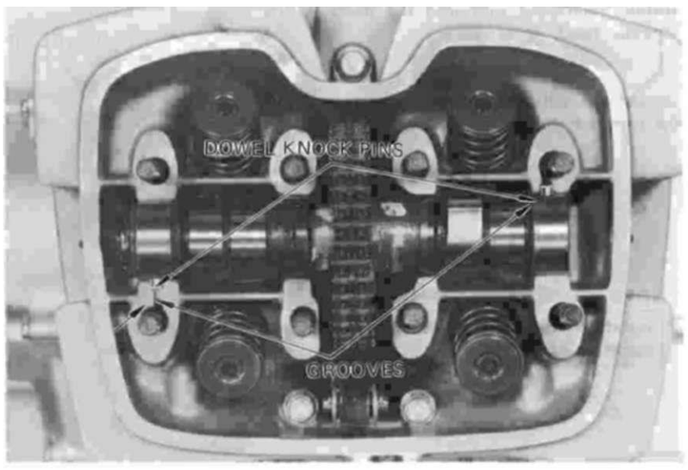
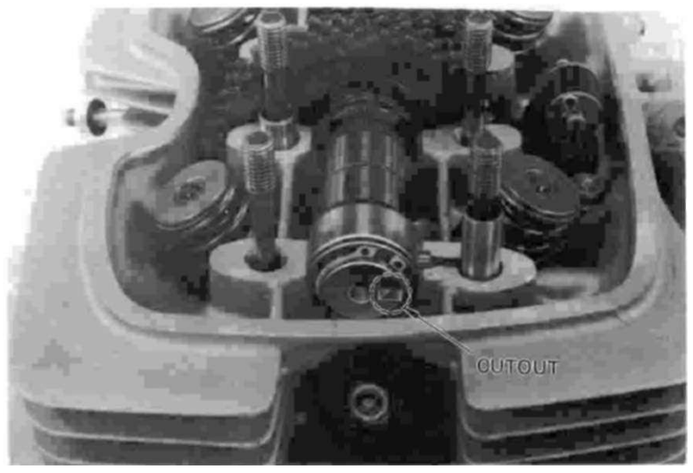
Insert the knock pins of the camshaft bushings into the grooves of the cylinder head. (Insert left and right sides securely.)

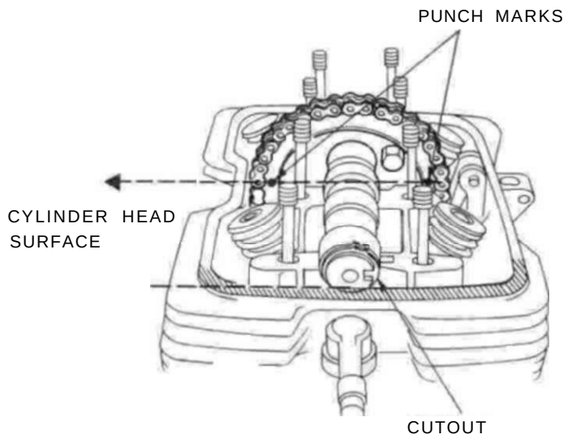


Turn the camshaft so that the cutout faces the intake side and positions it parallel to the cylinder head surface.



Place the punch marks of the cam sprocket parallel to the cylinder head surface.
Install the cam chain.
Tighten one cam sprocket setting bolt.
Turn the rotor counterclockwise 360' and tighten the other bolt.

TORQUE: 1.7-2.3 kg-m (12.3-16.6 ft-lb.)



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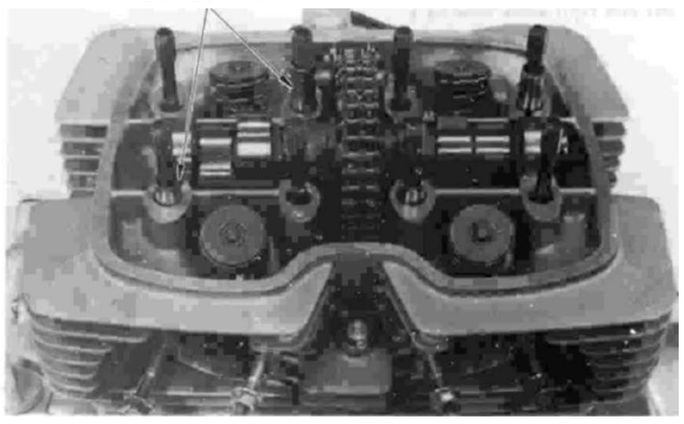
Install the dowel pins into the holes in the cylinder head.

DOWEL PINS



Loosen the adjusting screws fully and install the camshaft holder.

NOTE

Install the camshaft holder with the "F" marks to the front.

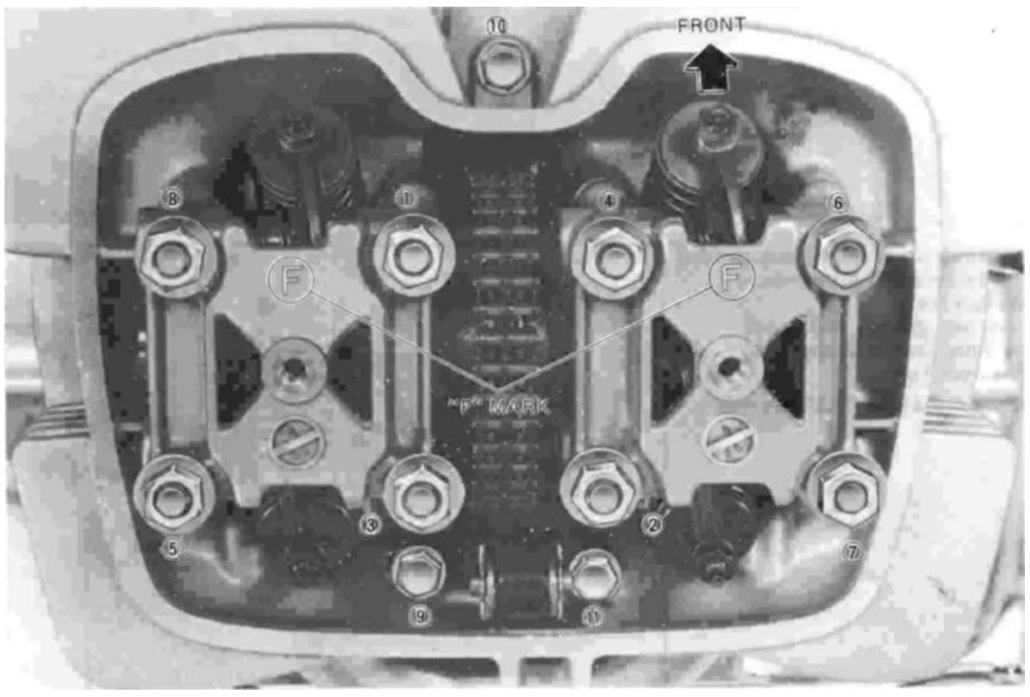
Torque in the sequence shown.

TORQUES:

NUT **1.6-2.0** kg-m **(11.6-14.5** ft-lb.)
BOLT **1.0-1.4** kg-m **(7.2-10.1** ft-lb.)

NOTE

Tighten an X pattern in 2-3 steps.



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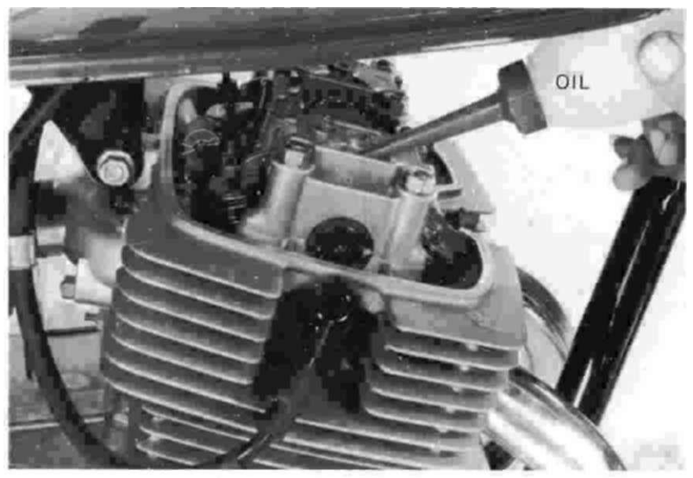
CYLINDER HEAD/VALVES

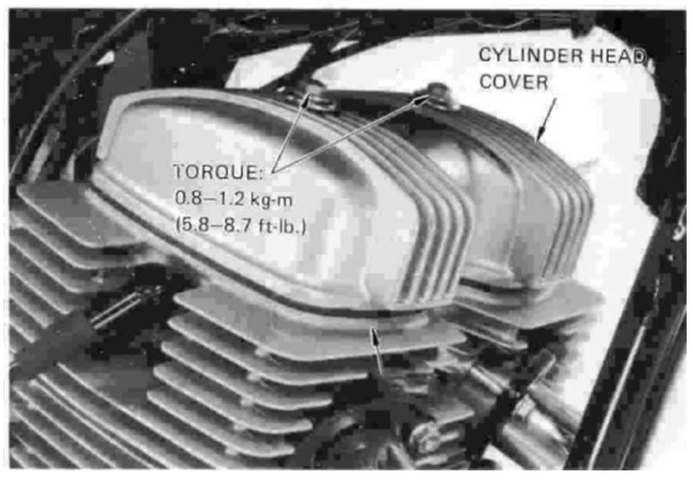
Fill the oil pockets in the cylinder head with oil so that the cam lobes are submerged.



Adjust valve clearance, Pages 3-4.
Adjust cam chain tensioner. Page 3-7.
Inspect the cylinder head cover gasket for damage or deterioration.

InstalL the head cover and tighten the bolts.

TORQUE: 0.8-1.2 kg-m (5.8-8.7 ft-lb.)



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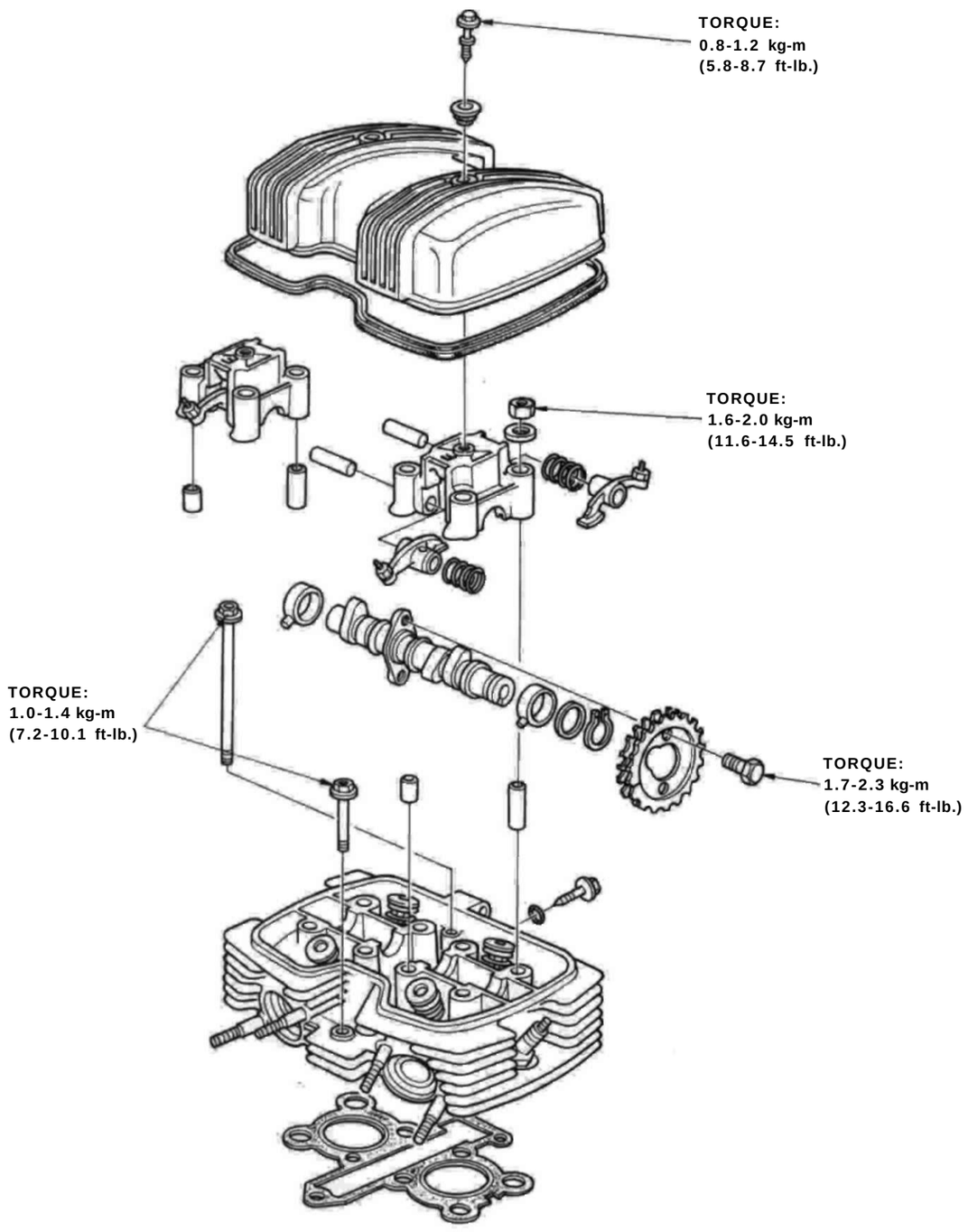

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7. CYLINDER/PISTON

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CYLINDER REMOVAL	7-3
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CYLINDER INSTALLATION	7-9

SERVICE INFORMATION

• WORKING PRACTICE

Cylinder head lubricating oil is fed through an oil passage in the cylinder.
Be sure this oil passage is not clogged and O-rings and dowel pins are in place before installing the cylinder head.

• TOOLS

Special Tools
- Piston ring compressor: 07954-4190000
- Piston base: 07958-2500000

• SERVICE DATA

ITEM		STANDARD	SERVICE LIMIT
Cylinder	I.D.	53.00-53.01 mm (2.0866-2.0870 in.)	53.1 mm (2.0905 in.)
	Out-of-round	----------	0.05 mm (0.0020 in.)
	Taper	----------	0.05 mm (0.0020 in.)
	Warpage	Max. 0.05 mm (0.0020 in.)	0.1 mm (0.0004 in.)
Pistons, piston rings and piston pins			
	Piston skirt O.D.	52.960-52.990 mm (2.0850-2.0862 in.)	52.86 mm (2.0811 in.)
	Piston pin bore	14.002-14.008 mm (0.5513-0.5515 in.)	14.05 mm (0.5531 in.)
	Piston pin O.D.	13.994-14.000 mm (0.5509-0.5512 in.)	13.98 mm (0.5504 in.)
Piston ring side clearance			
	Top/second	0.015-0.045 mm (0.0006-0.0018 in.)	0.12 mm (0.0048 in.)
	Oil	0.017 mm (0.0067 in.)	----------
Piston ring end gap	Top/second	0.15-0.35 mm (0.0060-0.0138 in.)	0.5 mm (0.0197 in.)
	Oil	0.2-0.9 mm (0.0078-0.0354 in.)	----------
Piston ring thickness	Top/second	1.175-1.190 mm (0.0463-0.0469 in.)	1.12 mm (0.0441 in.)
	Oil	2.35-2.55 mm (0.0925-0.1004 in.)	----------
Connecting rod small end I.D		14.016-14.034 mm (0.5518-0.5525 in.)	14.08 mm (0.5543 in.)

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TROUBLESHOOTING

Low or Uneven Compression
1. Worn cylinder or piston rings

Compression Too High
1. Excessive carbon deposits on pistons

Excessive Smoke
1. Worn cylinder and piston rings
2. Improperly installed piston rings
3. Damaged piston or cylinder

Engine Overheating
1. Excessive carbon deposits on piston or combustion chamber

Piston Slap
1. Worn cylinder and piston
2. Excessive carbon deposits

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CYLINDER REMOVAL

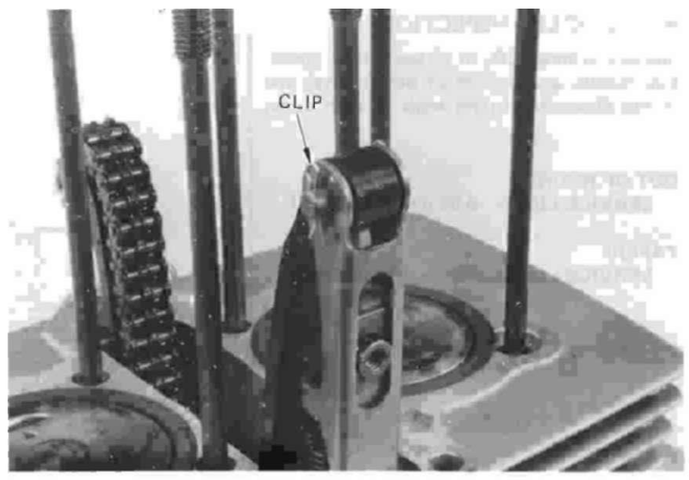
Remove the cylinder head (Refer to Section 6).

Pry off the cam chain tensioner clip and pin.

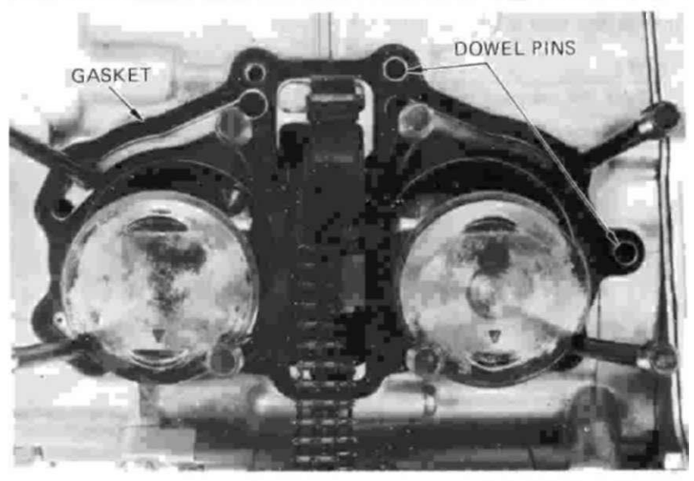
NOTE

Do not drop the clip and pin into the crankcase.

Remove the tensioner lock nut, washer and O-ring.
Remove the tensioner base.



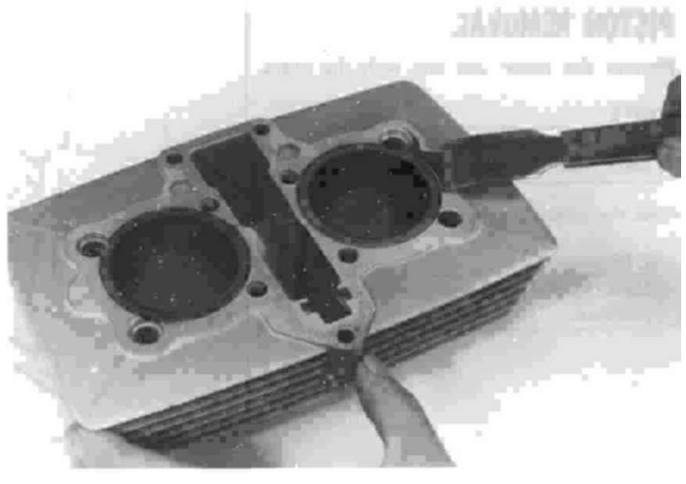
Remove the cylinder.
Remove the gasket and dowel pins.



Clean the base face of the cylinder with the scraper.

NOTE

Gasket will come off easier if soaked in solvent.
Avoid damaging the gasket surface.



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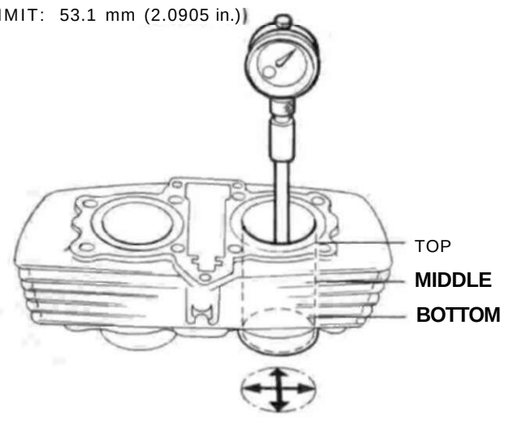
• CYLINDER INSPECTION

Measure cylinder I.D. in at least three places; top, middle, and bottom of piston travel, and in two directions at right angle to each other.

OUT OF ROUND:
SERVICE LIMIT: 0.05 mm (0.0020 in.)

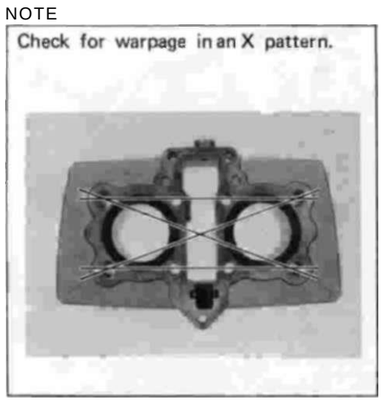
TAPER:
SERVICE LIMIT: 0.05 mm (0.0020 in.)

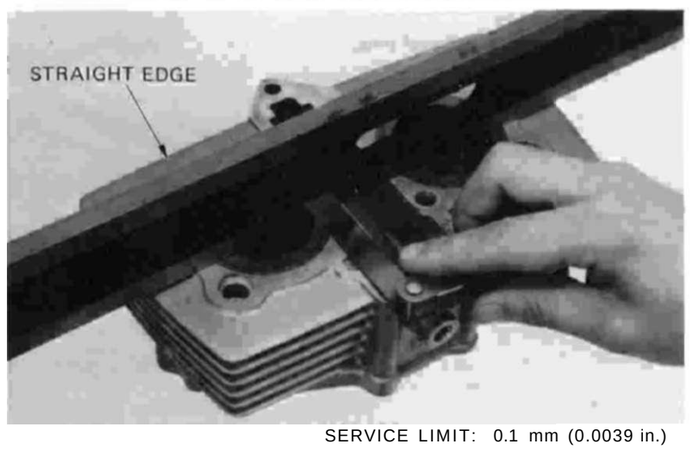
SERVICE LIMIT: 53.1 mm (2.0905 in.)



Inspect the base of the cylinder for warpage.

NOTE





SERVICE LIMIT: 0.1 mm (0.0039 in.)

PISTON REMOVAL

Remove the piston pin clip with the pliers.

NOTE

Be careful when removing clips to keep them from dropping into the crankcase.

Press the piston pin out of the piston.

NOTE

Mark the pistons to indicate the cylinder positions.

PISTON PIN CLIP

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- **PISTON/PISTON RING INSPECTION**

Inspect the piston ring-to-groove clearance.

CLEARANCE SERVICE LIMIT: 0.12 mm (0.0048 in.)

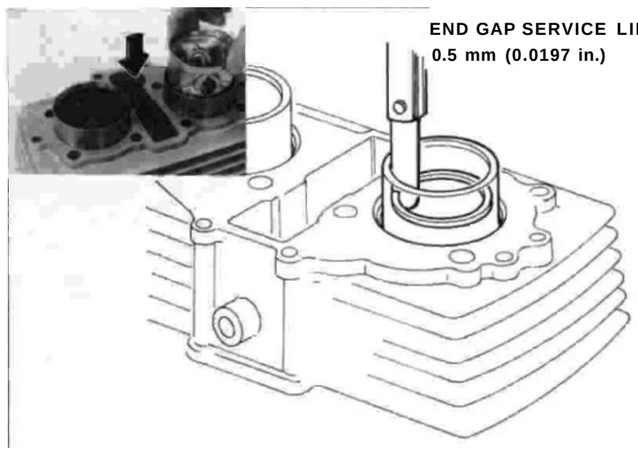
Remove the piston rings.

NOTE

Mark the rings so that they can be returned to their original location.

Inspect the piston for damage and cracks.
Inspect the groove for wear.

Insert each piston ring into the cylinder with the piston and inspect the end gap in the cylinder to a point 10 mm (0.4 in.) from bottom.



END GAP SERVICE LIMIT: 0.5 mm (0.0197 in.)

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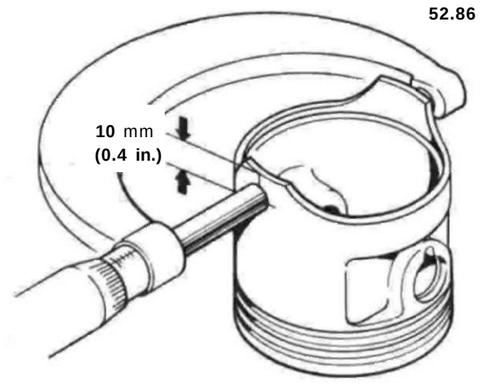
CYLINDER/PISTON

Measure the piston O.D. at the skirt.
Measurements should be taken at a point **10** mm (0.4 in.) from the bottom.

O.D.SERVICE LIMIT:
52.86 mm **(2.0811 in.)**

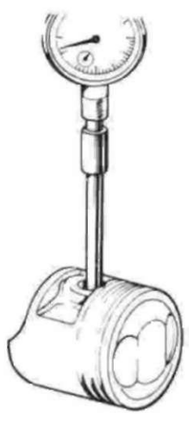


Calculate the cylinder-to-piston clearance.

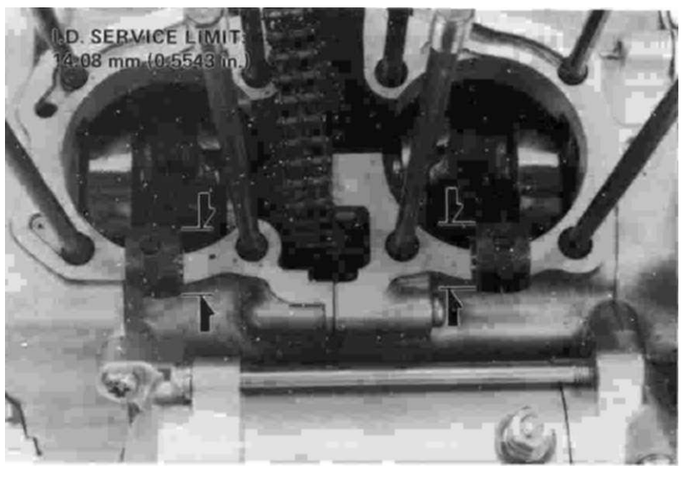
SERVICE LIMIT: 0.01 mm **(0.04 in.)**

Measure the piston pin hole I.D.
Measure piston pin bore I.D. in two directions at right angle to each other.

KD. SERVICE LIMIT:
14.05 mm **(0.5531 in.)**



Inspect the connecting rod small end I.D.



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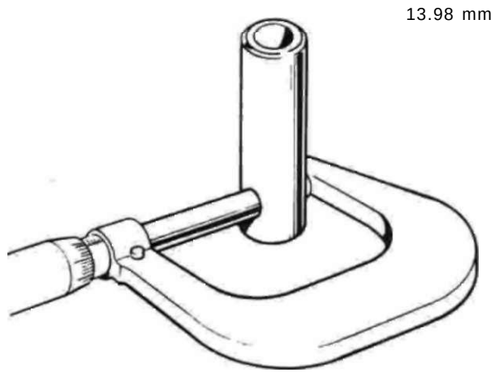
CYLINDER/PISTON

Measure the piston pin O.D.
Measure at front, center and rear and in two directions across from each other.

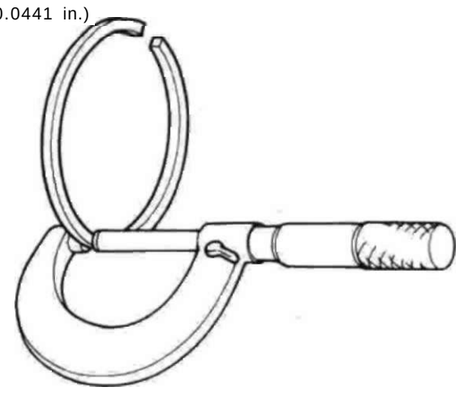
O.D. SERVICE LIMIT.
13.98 mm (0.5504 In.)



Determine the piston-to-piston pin clearance.
SERVICE LIMIT: 0.04 mm (0.0016 in.)

Measure each piston ring thickness.
Take measurements at several points.

TOP AND SECOND RING THICKNESS
SERVICE LIMIT:
1.12 mm (0.0441 in.)

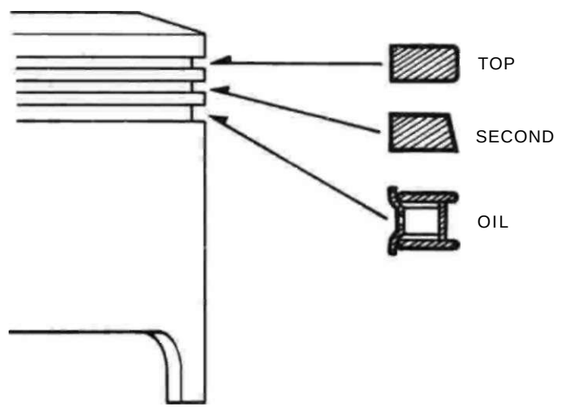


• PISTON RING INSTALLATION

Instai! the piston rings.

NOTE

Avoid piston and piston ring damage during installation.
All rings should be installed with the markings facing up.
After installation, the rings should be free to rotate in the grooves.
Clean the ring, grooves before installing the piston rings.



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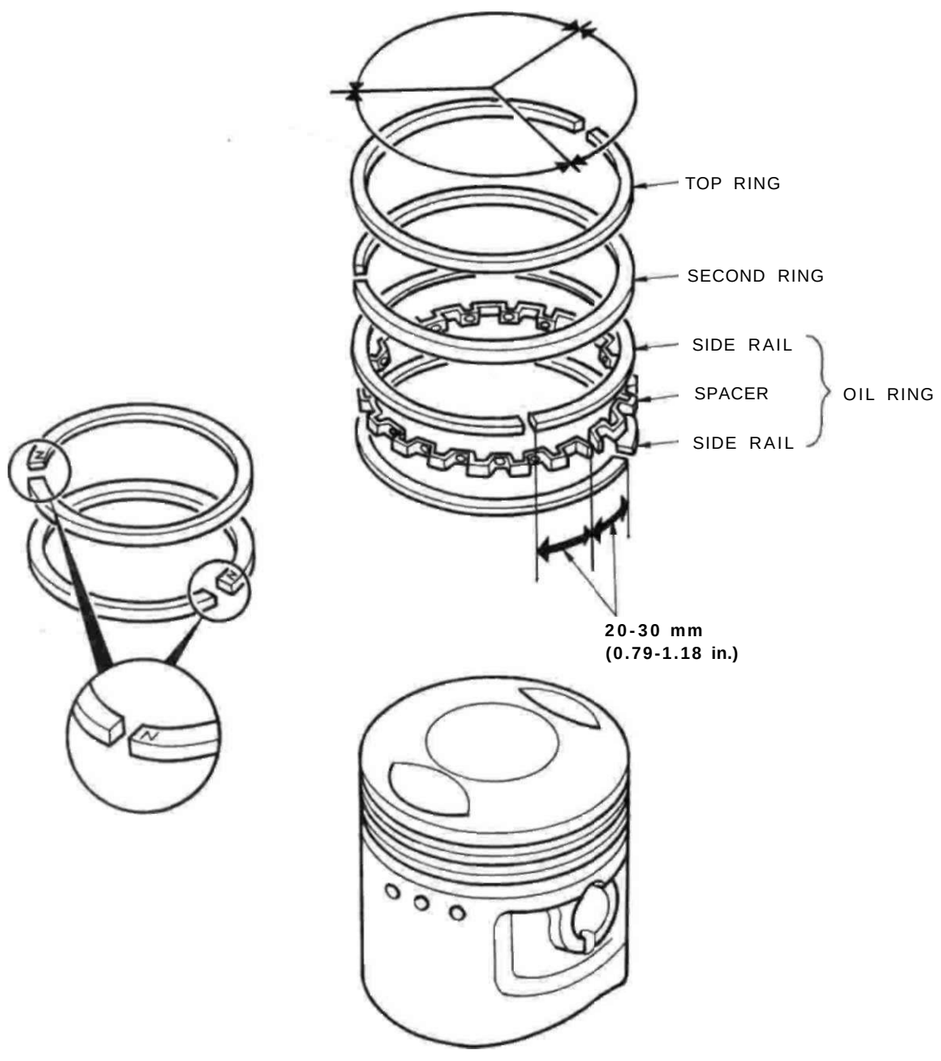
Space the ring gaps 120 apart. The gaps of the three-piece oil ring should correspond with the gaps of the spacer.
When installing the oil ring, install the spacer first and then the rails.



NOTE

- After installing each ring on the piston, turn the rings by hand to check for smooth movement.
- When installing a new ring, check that it fits smoothly into the ring groove and does not bind.

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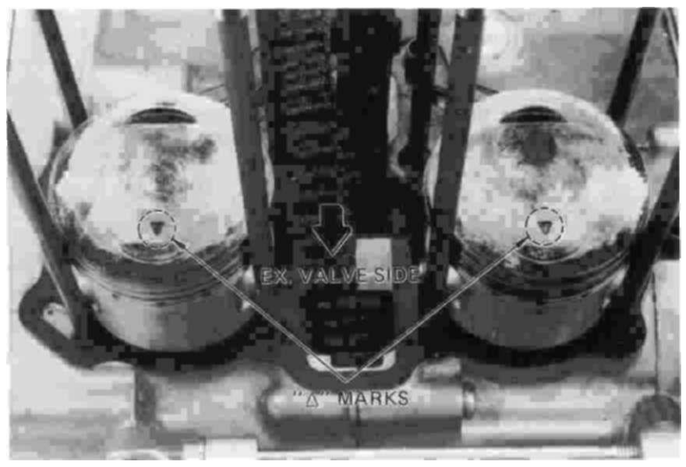
PISTON INSTALLATION

Install the piston and piston pins.

NOTE

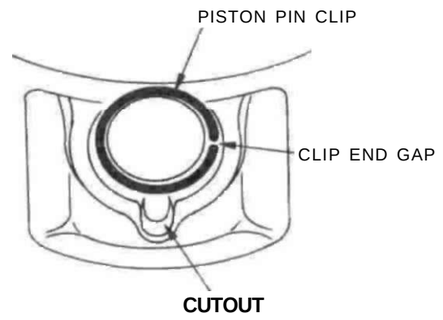
- Position the "•" mark on the piston to the exhaust valve side.
- Install the pistons in their original locations.



Use new piston pin clips when assembling.

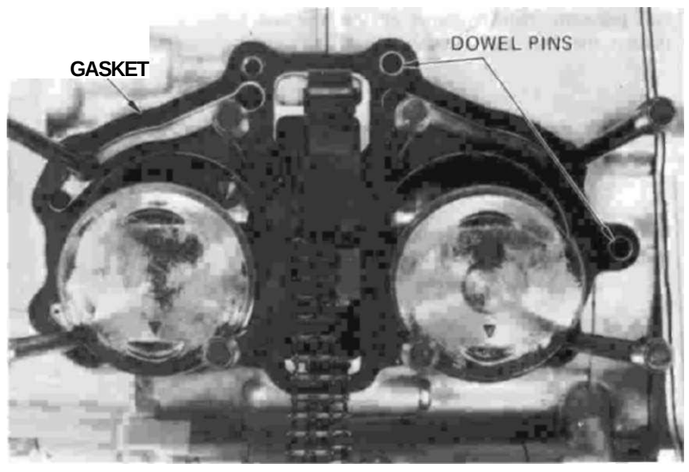
NOTE

Install with the piston pin clip end gap turned away from the cutout of the piston.



CYLINDER INSTALLATION

Install the dowel pins and the gasket.



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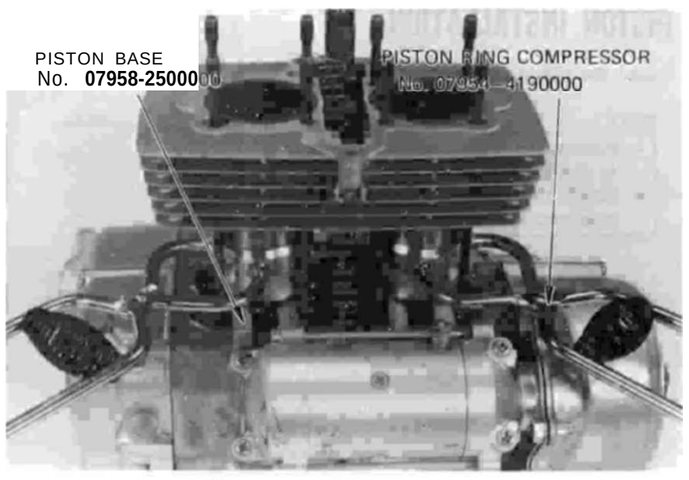
Install the cylinder while holding the piston rings with the piston ring compressors.

NOTE

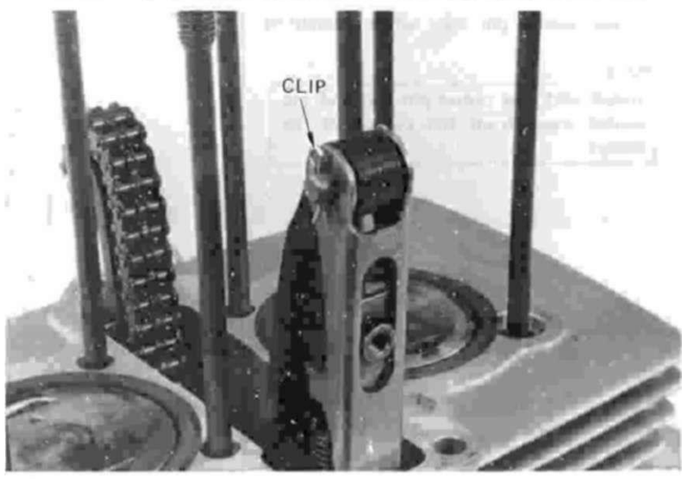
Avoid damaging the pistons and piston rings when installing the cylinder.



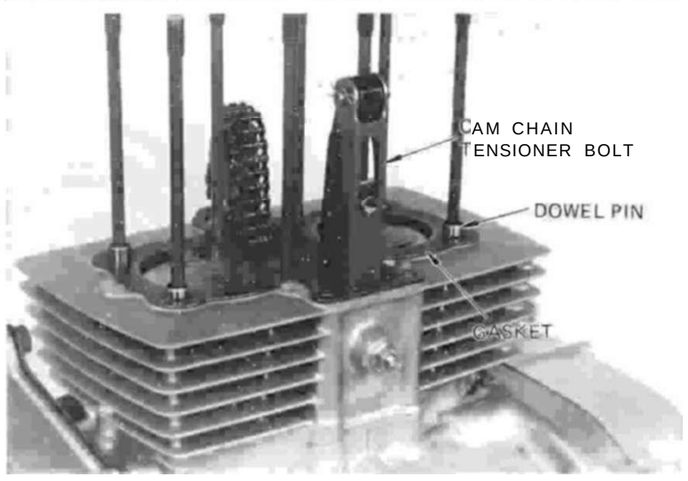
Install the cam chain guide.
Install the cam chain tensioner base and slide the O-ring over the tensioner adjusting bolt.
Install the plain washer and lock nut.
Install the tensioner on the tensioner base with the pin and clips.

NOTE

Do not drop the pin or dip into the crank case.



Pull the cam chain tensioner al the way and tighten the lock nut securely.



Install the dowel pins, O-rings and the gasket.
Install the cylinder head (Refer to Section **6).**

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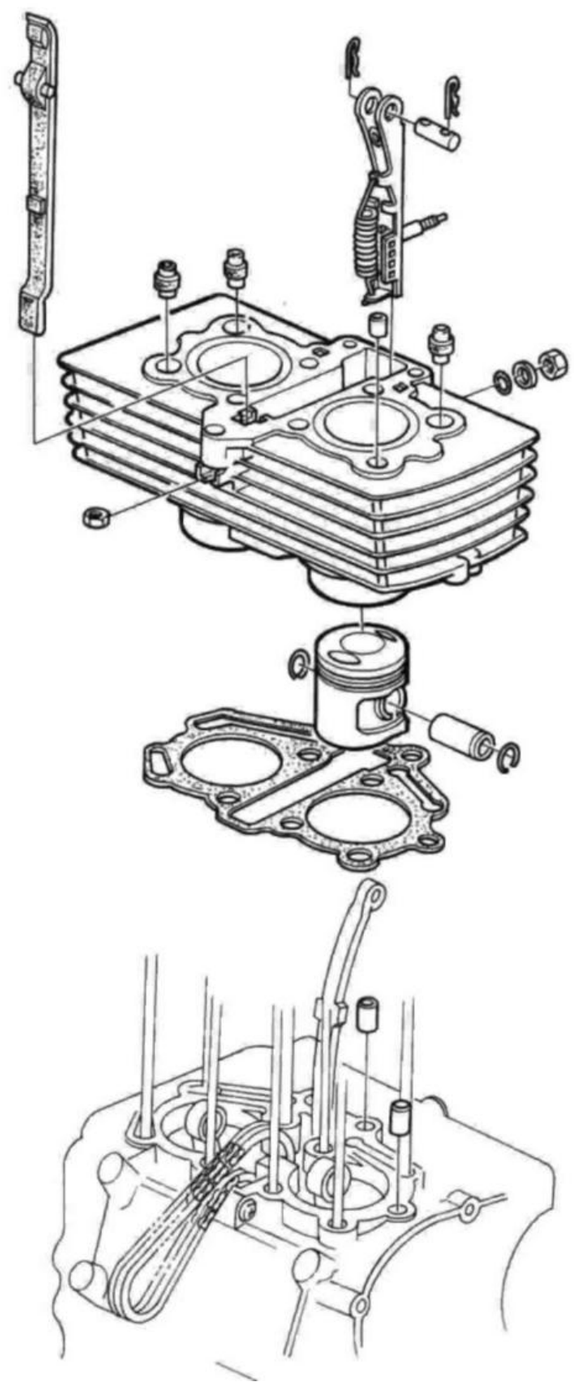

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HONDA CM185T

8. CLUTCH/OIL PUMP/GEAR SHIFT/ KICK STARTER

SERVICE INFORMATION	8-1
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RIGHT CRANKCASE COVER REMOVAL	8-3
CLUTCH	8-3
OIL PUMP	8-8
GEAR SHIFT LINKAGE	8-12
KICK STARTER	8-14
RIGHT CRANKCASE COVER INSTALLATION	8-16

SERVICE INFORMATION

• WORKING PRACTICE

This section covers removal, installation and servicing of the clutch, oil pump, gear shift linkage and kick starter with the right crankcase cover removed. All these operations can be accomplished with the engine in the frame.

• TORQUE

14 mm lock nut: 4.5-6.0 kg-m (32.5-43.4 ft-lb.)

• TOOL

Special Tool
Clutch outer holder: Tool No. 07923-1070001

• SERVICE DATA

ITEMS		STANDARD	SERVICE LIMIT
Clutch	Clutch lever free play	10-20 mm (3/8-3/4in.)	
	Clutch spring free length	36.2 mm (1.4252 in.)	33.1 mm (1.3031 in.)
	Clutch disc thickness	3.0 mm (0.1181 in.)	2.6 mm (0.1024 in.)
	Clutch plate warpage	0-0.1 mm (0-0.0039 in.)	0,2 mm (0,0079 in.)
Oil pump	Rotor tip clearance	0.15 mm (0.0059 in.)	0.2 mm (0.0079 in.)
	Rotor-to-cover clearance	0.01-0.07 mm (0.0004-0.0028 in.)	0.12 mm (0.0048 in.)
	Rotor-to-body clearance	0,15-0,18 mm (0.0059-0,0071 in.)	0.25 mm (0.0098 in.)
Kick starter	Pinion I.D.	18.020-18.041 mm (0.7094-0.7103 in.)	18.07 mm (0.7114 in.)
	Spindle O.D.	17.959-17.980 mm (0.7070-0.7079 in.)	17.93 mm (0.7059 in.)

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TROUBLESHOOTING

Faulty clutch operation can usually be corrected by adjusting the free play.

Clutch Slips When Accelerating
1. No free play
2. Discs worn
3. Springs weak

Clutch Will Not Disengage
1. Too much free play
2. Plate warped

Motorcycle Creeps With Clutch Disengaged
1. Too much free play
2. Plates warped

Excessive Lever Pressure
1. Clutch cable kinked, damaged or dirty
2. Lifter mechanism damaged

Clutch Operation Feels Rough
1. Outer drum slots rough

Hard Shifting
1. Stopper plate bent or worn
2. Improper clutch adjustment

Gear Shift Pedal Won't Return
1. Return spring broken
2. Shift spindle interferring with crankcase or cover

Jumps Out Of Gear
1. Stopper arm spring broken or weak

Low Oil Pressure
1. Plugged oil filter screen
2. Oil pump rotors worn
3. External oil leaks
4. Oil level low

High Oil Pressure
1. Incorrect oil being used
2. Plugged oil filter screen, gallery or metering orifice

No Oil Pressure
1. Oil pump drive gear broken
2. Oil pump assy broken
3. Leaks from oil circuit

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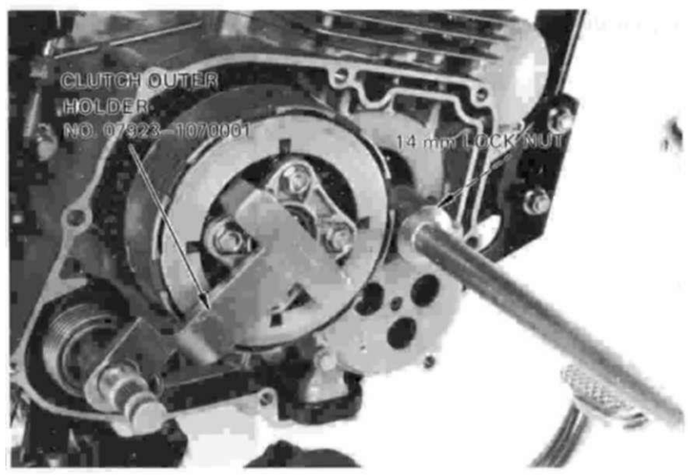
RIGHT CRANKCASE COVER REMOVAL

Drain all oil from the engine.
Disconnect the clutch cable at the engine.
Remove the right muffler assembly.
Remove the kick starter pedal.
Remove the right crankcase cover by removing the screws.

CLUTCH

Install the clutch holder on the lifter plate and into kick spindle and remove the 14 mm lock nut.
Remove the pin, lock washer and oil pump drive gear.



Remove the four lifter plate setting bolts, the lifter plate and the four clutch springs.

NOTE

Loosen the bolts in an X pattern in two or more steps.

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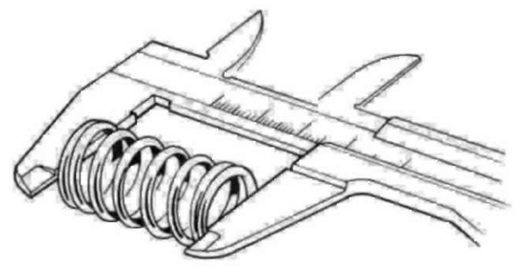
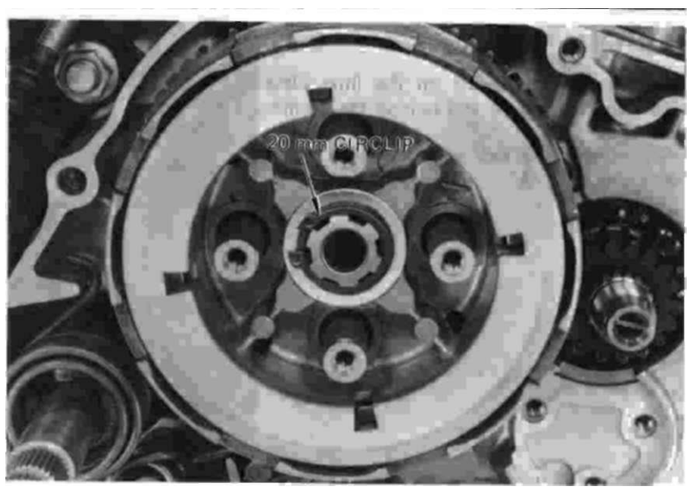
• CLUTCH SPRING INSPECTION

Inspect the clutch spring free length.

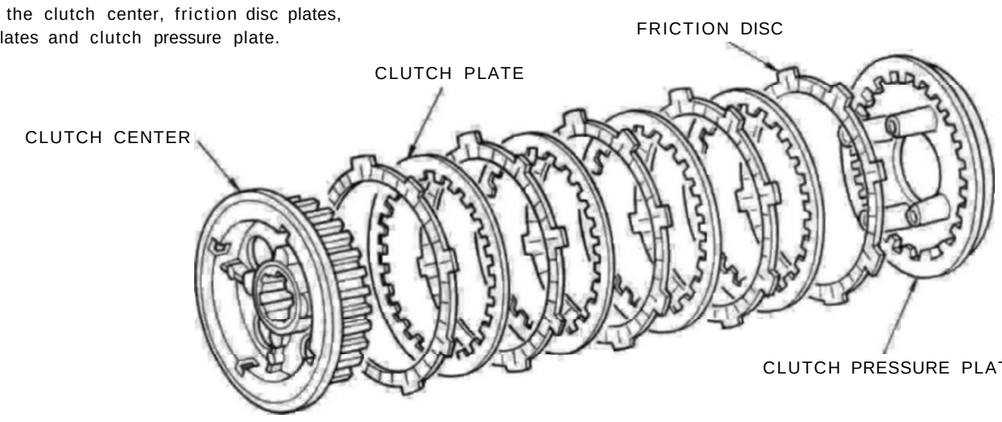
SERVICE LIMIT: 33.1 mm (1.3031 in.)



Pry off the 20 mm circlip.



Remove the clutch center, friction disc plates, clutch plates and clutch pressure plate.



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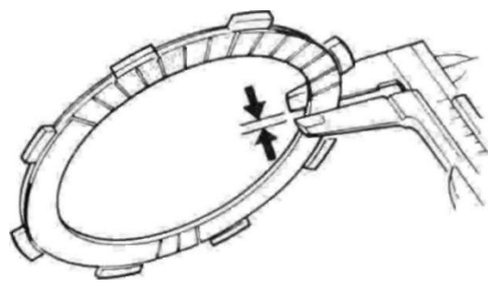
• CLUTCH FRICTION DISC INSPECTION

Check the friction discs, replacing those which are discolored or worn.
Measure each friction disc thickness.

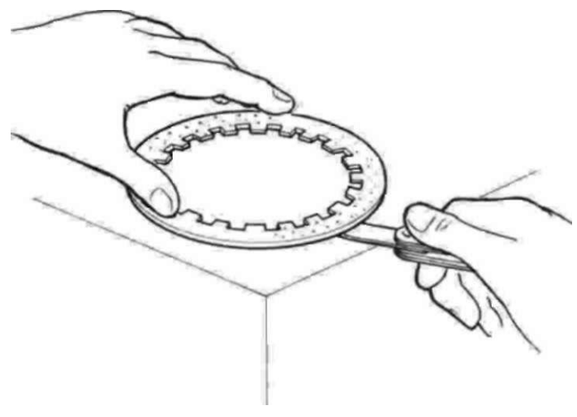
SERVICE LIMIT: 2.6 mm (0.1024 in.)



• CLUTCH PLATE INSPECTION

Check the plates for warpage on a surface plate and with a feeler gauge.

SERVICE LIMIT: 0.2 mm (0.0079 in.)



Remove the splined washer on the clutch outer.
Remove the drive gear.

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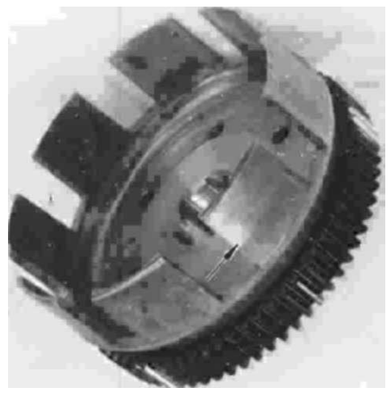
• CLUTCH OUTER INSPECTION

Check the slots in the clutch outer for nicks, cuts or indentations made by the friction discs.

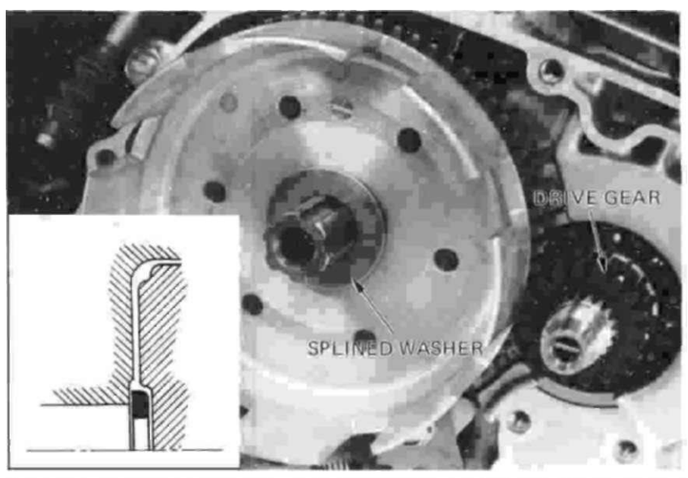


• CLUTCH REASSEMBLY

Install the drive gear and the clutch outer. Install the splined washer.

NOTE

Note the direction of the splined washer.



Assemble the pressure plate, the friction discs and the clutch center.

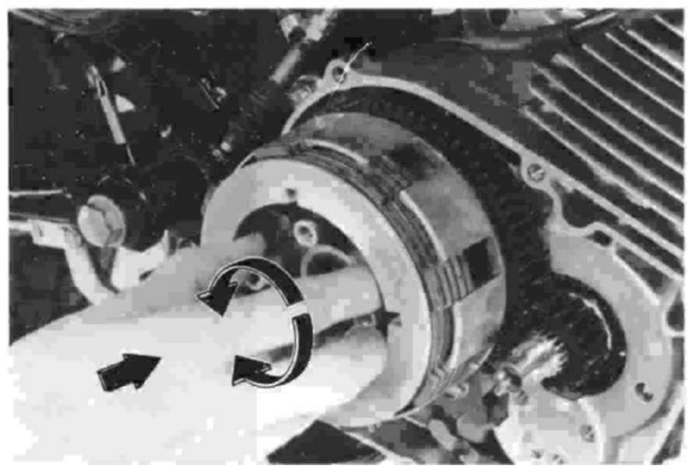
NOTE

Lubricate new clutch discs with thin oil before assembling.

Install them in the clutch outer.

NOTE

Install the clutch assy while holding the pressure plate and clutch center and tuYning it.



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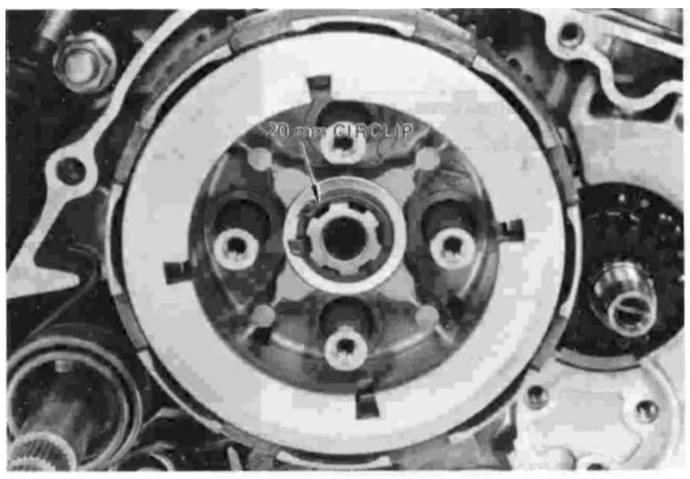
Install the 20 mm circlip.
Install the springs and lifter plate and tighten the bolts.

NOTE

Tighten the bolts in two or more steps and in cross pattern.

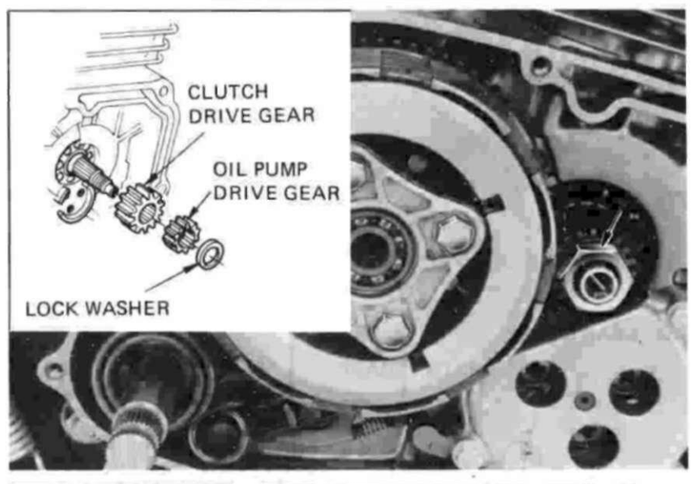


Install the clutch drive gear and oil pump drive gear.

Install the lock washer and pin.

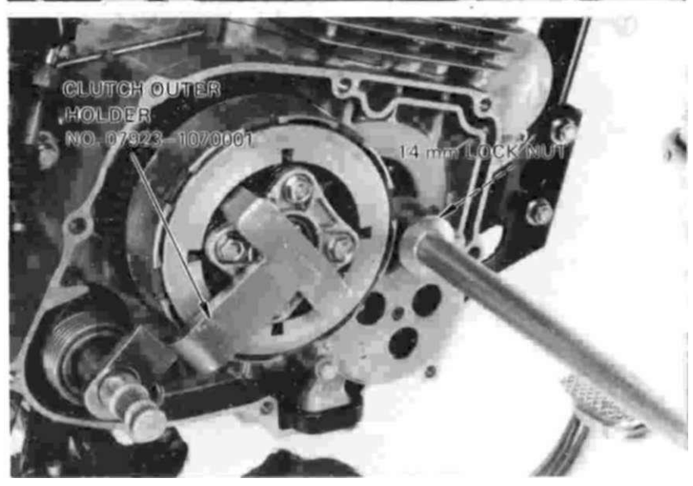
NOTE

Install the washer with the word "OUTSIDE" facing the right side.



Tighten the 14 mm lock nut.

TORQUE: 4.5-6.0 kg-m (32.5-43.4 ft-lb.)



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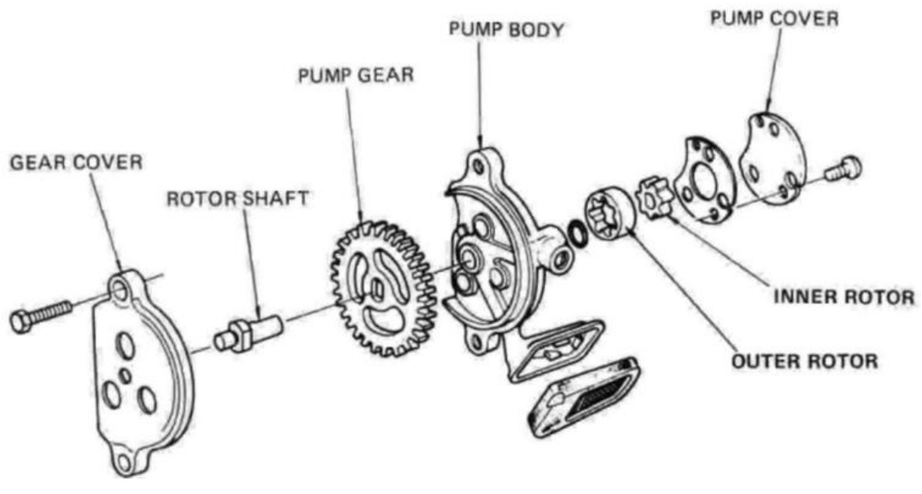
OIL PUMP

NOTE

Clean the oil filter screen at time of disassembly.



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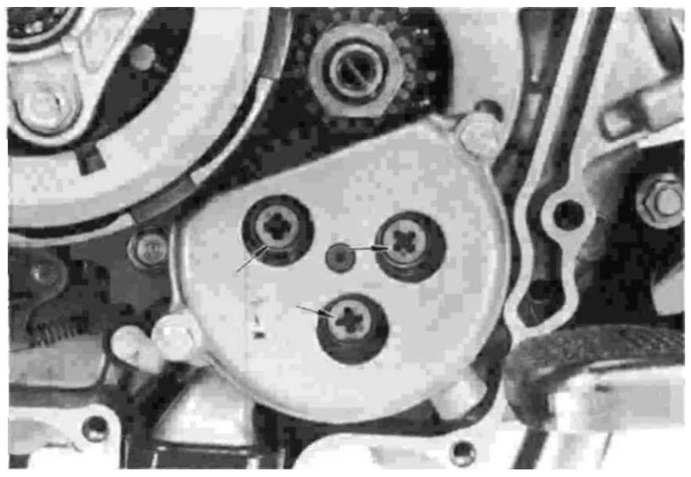
• OIL PUMP REMOVAL

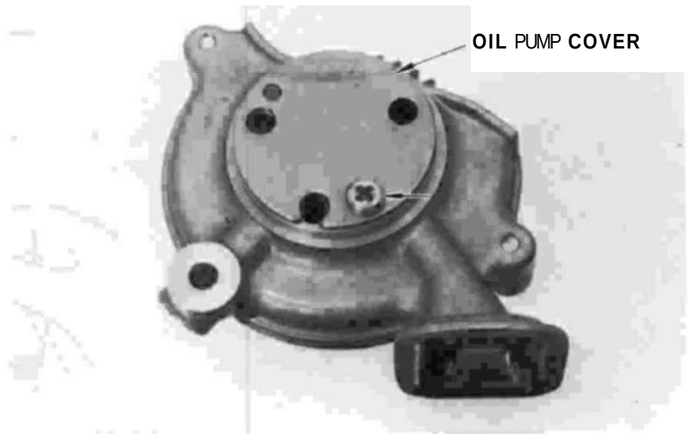
Remove the generator cover and rotate the A.C. generator rotor counterclockwise until the cut-out of the oil pump gear aligns with the mounting screws.

Remove the three screws, and remove the oil pump.



• OIL PUMP DISASSEMBLY

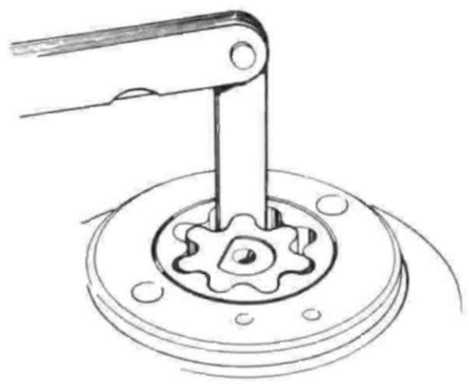
Remove the oil pump cover.



• OIL PUMP INSPECTION

Measure the rotor tip clearance.

SERVICE LIMIT: 0.2 mm (0.0079 **in.)**



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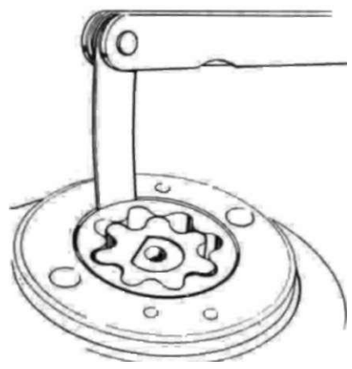
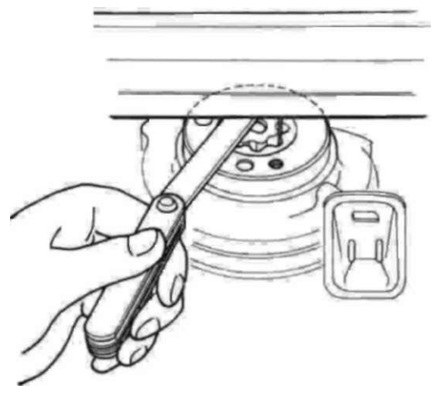
Measure the rotor-to-body clearance.

SERVICE LIMIT: 0.25 mm (0.0098 in.)



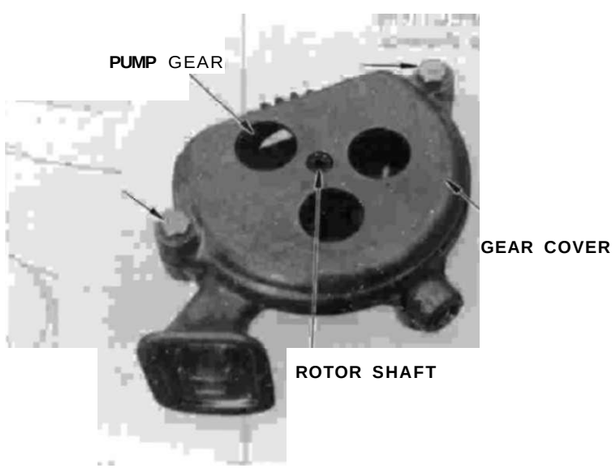
Measure the rotor-to-cover clearance.

SERVICE LIMIT: **0.12** mm **(0.0048** in.



Remove the rotors.

Remove the gear cover and the pump gear and pull the rotor shaft out.



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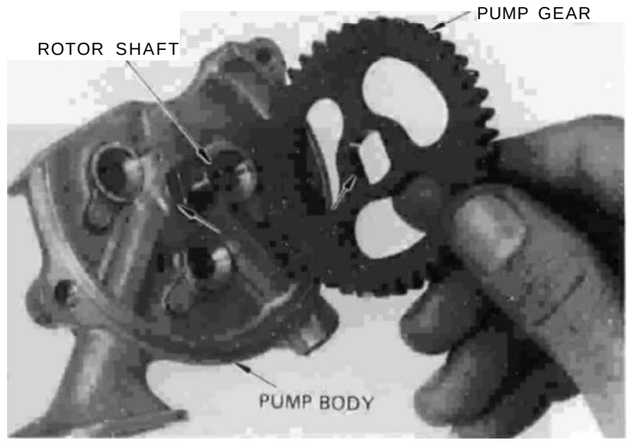
• OIL PUMP REASSEMBLY

Install the rotor shaft and the pump gear into the pump body.

NOTE

Align the pump gear cutout with the rotor shaft cutout.

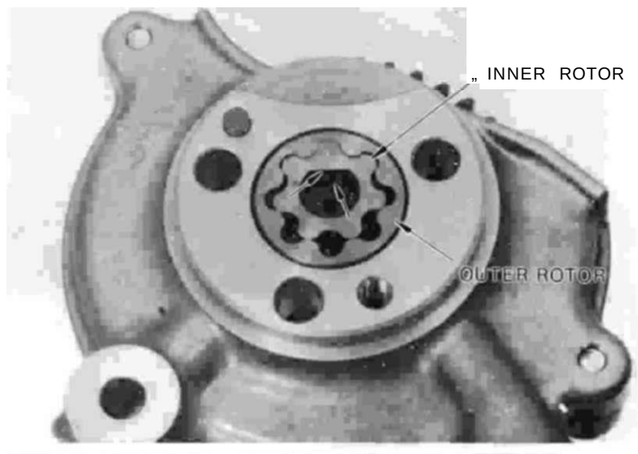


Install the gasket and cover.

Install the inner and outer rotors.

NOTE

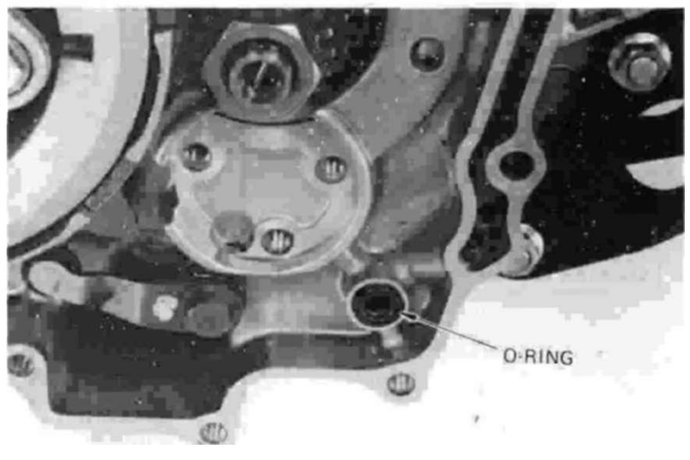
Align the inner rotor cutout with the rotor shaft cutout.



Install the gasket and cover.
Check for smooth operation.

• OIL PUMP INSTALLATION

Install the new O-ring correctly and instal the oil pump.



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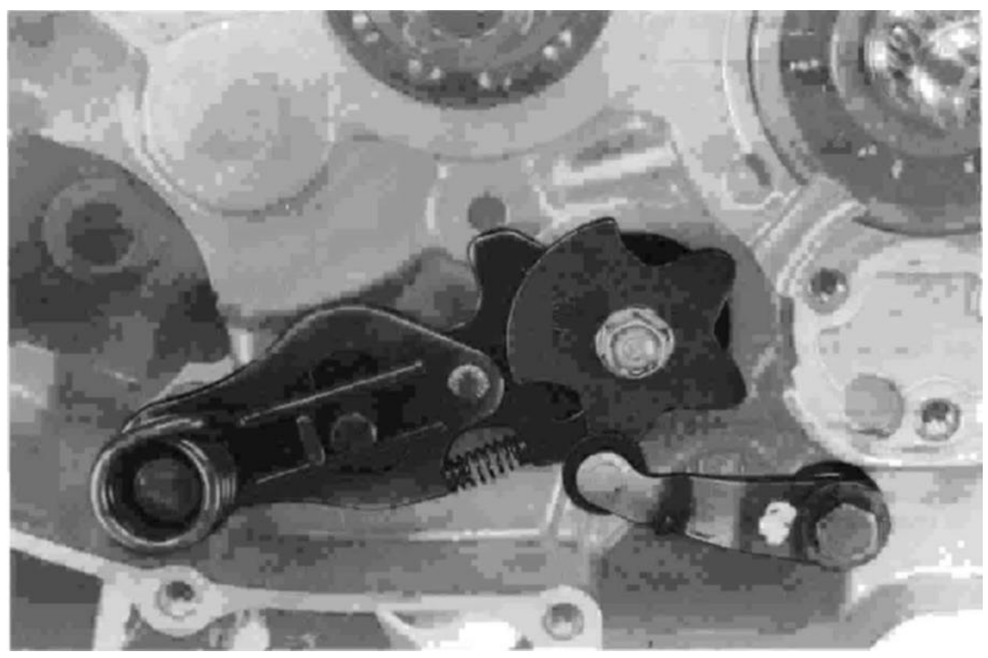
GEAR SHIFT LINKAGE

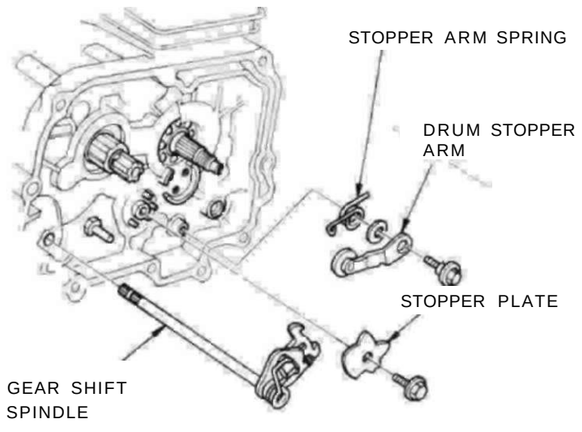


• DISASSEMBLY

Remove the clutch.
Remove the gear shift pedal and the stopper arm.
Remove the stopper plate and the shift dium pins.
Remove the gear shift spindle.

NOTE

Check the each part for wear or damage.



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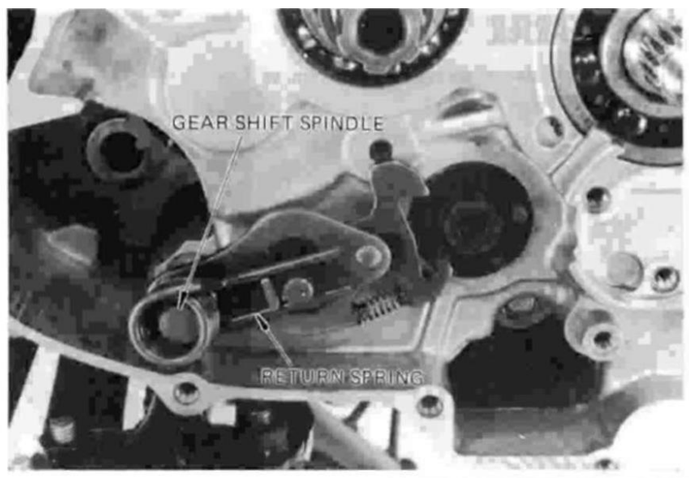
- **ASSEMBLY**

Install the gear shift spindle.

NOTE

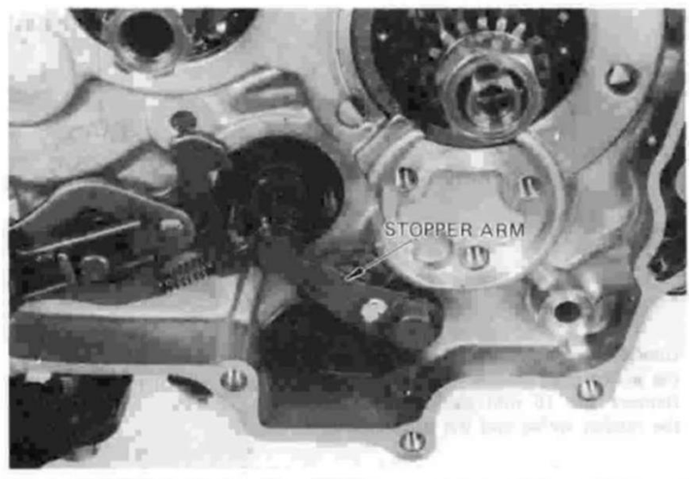
Insert the end of the return spring around the return spring pin.



Install the stopper arm.

NOTE

Install the spring as shown.
After installing, check stopper arm operation.



Install the stopper plate.

NOTE

Insert pin into hole of the stopper.

Tighten the stopper plate setting bolt.

NOTE

I After reassembly, check for operation.

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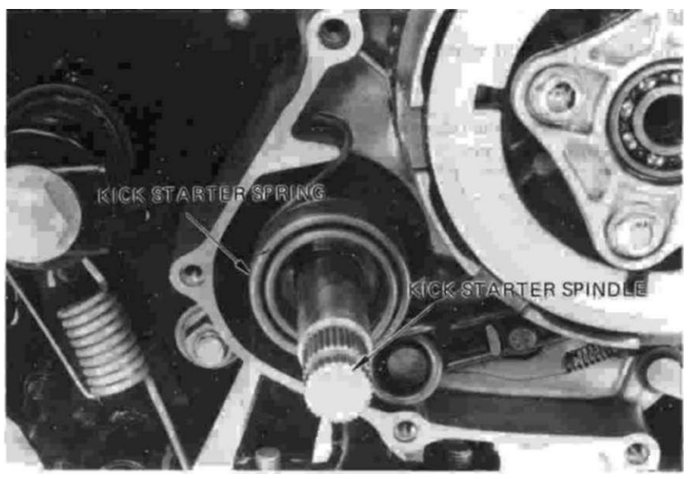
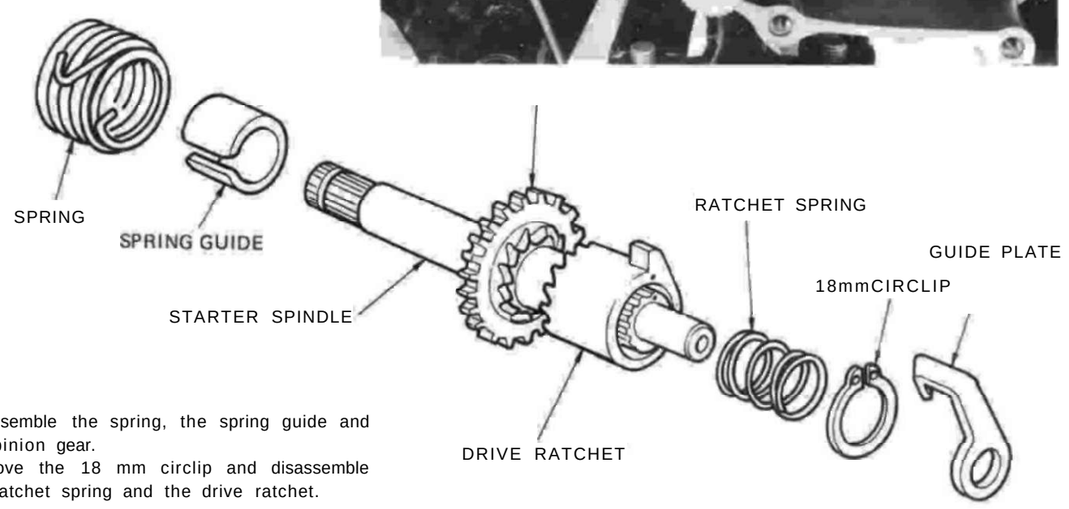
KICK STARTER

Pull the kick starter spring out and remove the kick starter.





Disassemble the spring, the spring guide and the pinion gear.
Remove the 18 mm circlip and disassemble the ratchet spring and the drive ratchet.

- KICK STARTER PINION INSPECTION

Measure the kick starter pinion I.D.

I.D. SERVICE LIMIT:
18.07 mm (0.7114 in.)

Measure the kick starter pinion O.D. with a micrometer.

SERVICE LIMIT: 17.93 mm (0.7059 in.)

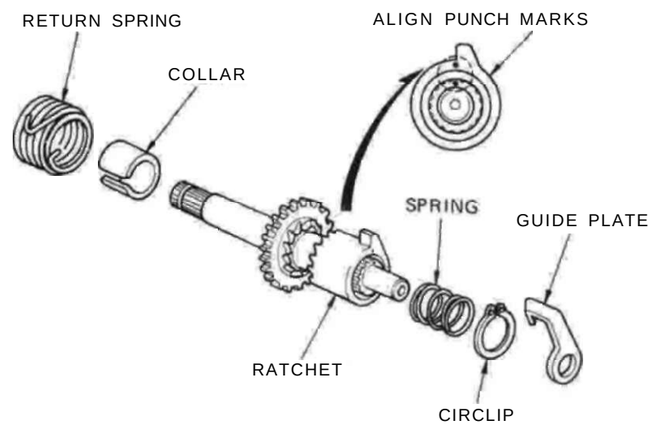
• KICK STARTER ASSEMBLY

Assemble the ratchet and the spring onto the spindle.

NOTE

Align the punch marks.

Insert the circlip in the groove of the spindle. Assemble the guide plate, the collar and the return spring on the spindle.

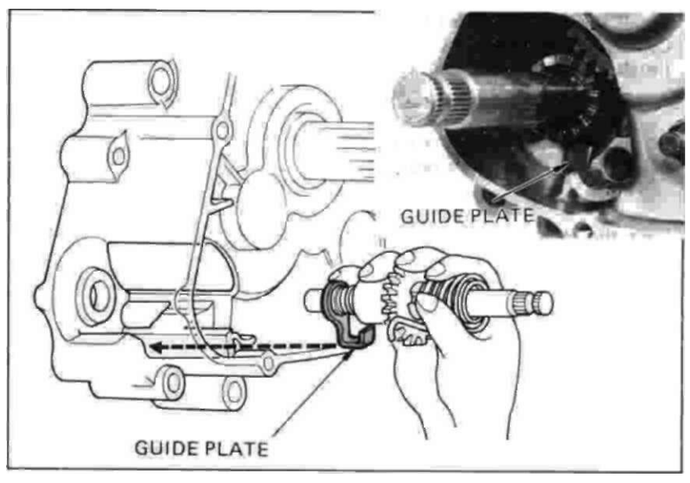


• KICK STARTER INSTALLATION

Install the kick starter.

NOTE

Set the guide plate in the groove on the right crank case.



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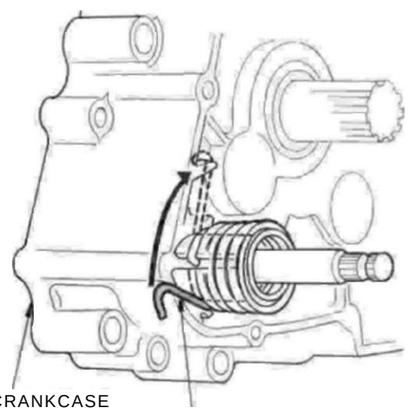
Hook the end of the spring onto the right crankcase.

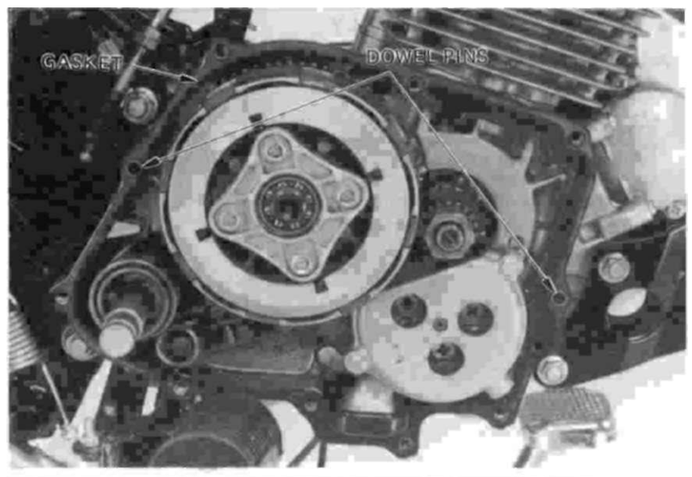
NOTE

After assembly, check the kick starter operation.



RIGHT CRANKCASE COVER INSTALLATION

Install the dowel pins and gasket.



Install the right crankcase cover.
Connect the clutch cable.
Install the kick starter pedal and right muffler.

Refill the engine with the recommended oil and check for level. (See page 2-2.)

Start the engine and check clutch operation.

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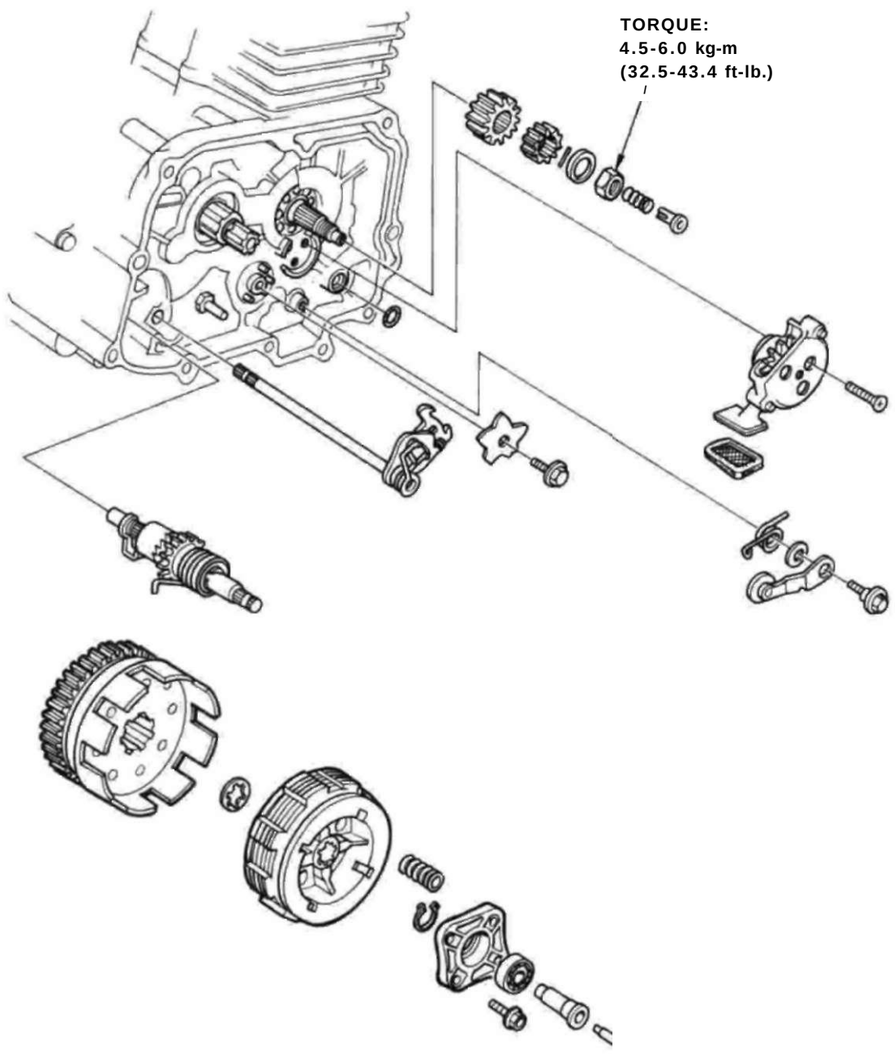

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HONDA CM185T

9 A.C.GENERATOR/ STARTER MOTOR

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A.C. GENERATOR ROTOR REMOVAL	9- -9
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A.C. GENERATOR INSTALLATION	9- -11
LEFT CRANKCASE COVER INSTALLATION	9- 12

SERVICE INFORMATION

- **WORKING PRACTICE**

This section covers removal, installation and servicing of the contact breaker, A.C. generator, starter clutch and starter motor with the left crankcase cover removed. All these operations can be accomplished with the engine in the frame.

- **TOOLS**

Special Tool
- Clutch outer holder: Tool No. 07923-1070001

Common Tools
- Rotor puller: Tool No. 07733-0020000
- Universal holder: Tool No. 07725-0010101

- **TORQUE**

Rotor bolt:	4.5-5.0 kg-m (32.5-36.2 ft-lb.)

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TROUBLESHOOTING

Engine Cranks But Will Not Start
1. Improper ignition timing
2. No spark at plugs

No Spark At Plugs
1. Points burned, wet, fauled or dirty
2. Improper point gap
3. Breaker wire open or shorted
4. Faulty stater coils
5. Faulty A.C. generator
6. Faulty ignition switch
7. Faulty ignition coil
8. Faulty high tension cord
9. Faulty spark plug

Engine Starts But Runs Poorly
1. Worn spark plug/or breaker points
2. Incorrect point gap
3. Improper ignition timing
4. Faulty advance mechanism

Starter Motor Will Not Turns
1. Loose or disconnected wire or cable
2. Faulty starter motor

Starter Motor Turns Engine Slowly
1. Binding in starter motor, drive chain or drive sprocket

Starter Motor Turns But Engine Does Not Turn
1. Faulty starter clutch
2. Faulty starter motor planetary gear
3. Drive chain or sprocket broken

Starter Motor And Engine Turn But Engine Does Not Start
1. Ignition circuit problems

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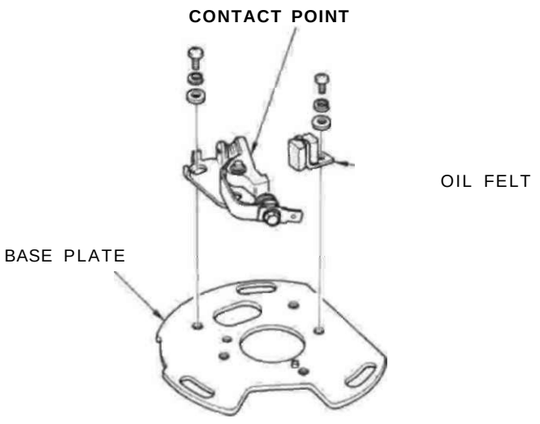
CONTACT BREAKER DISASSEMBLY

Remove the A.C. generator cover and gasket.
Remove the base plate attaching screws.
Disconnect the breaker point wire.

Remove the breaker point attaching screws.
Remove the oil felt attaching screw.

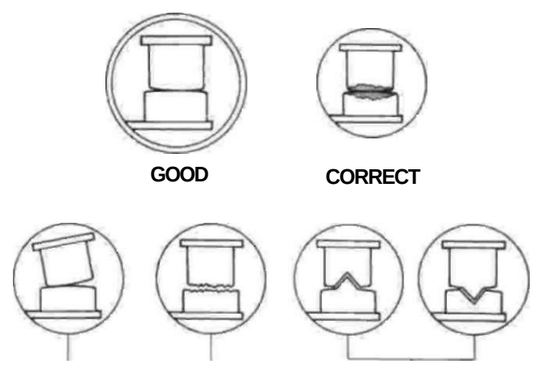


- CONTACT BREAKER POINT INSPECTION

Inspect the contact point surface for wear or pitting.

NOTE

Clean with point file or grind stone if the point surface is dirty.
Replace badly worn or pitted points.



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• CONTACT BREAKER POINT ASSEMBLY

The assembly sequence is essentially the reverse of disassembly.

NOTE

Moisten the felt with a small amount of oil.

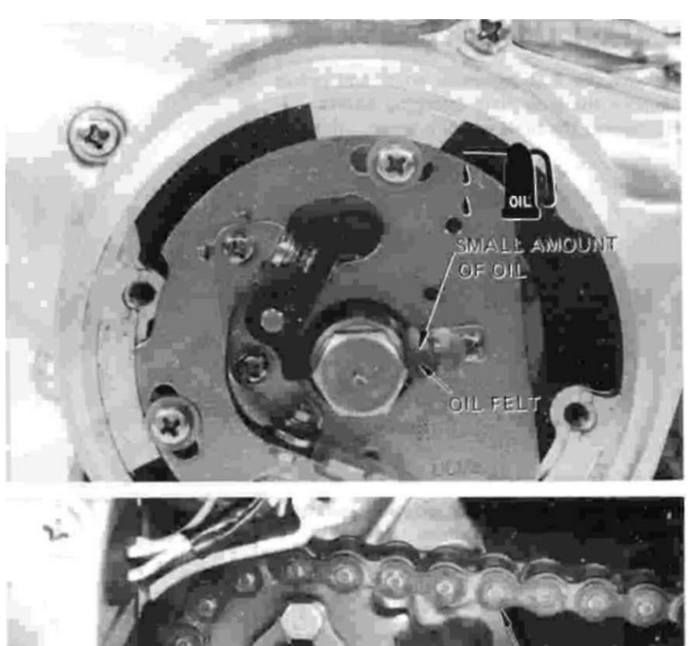
After reassembly, perform point gap and ignition timing inspection and adjustment. (See page 3-5.)

DRIVE SPROCKET REMOVAL

Remove the left crankcase rear cover.
Remove the chain clip, master link.
Remove the drive chain.
Remove the flexing plate and drive sprocket.

• DRIVE SPROCKET INSTALLATION

The installation sequence is essentially the reverse of removal



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LEFT CRANKCASE COVER REMOVAL

Remove the left muffler.
Remove the gear shift pedal and remove the left crankcase rear cover.
Remove the point cover.

Disconnect the A.C. generator coupler
Remove the left crankcase cover.
Remove the stator coil.

• STATOR COIL INSPECTION

Try the stator coil continuity test.
There should be continuity between the three lead wires: pink-white, white-yellow, yellow-pink of the stator coil.

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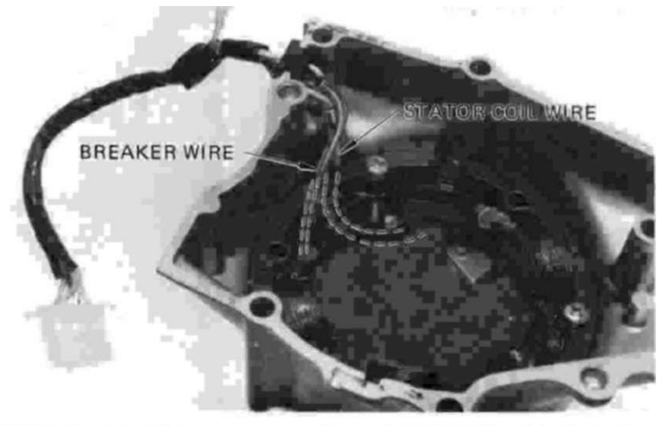
Try the insulation test.
There may be no continuity between white, pink or yellow wire and ground.

*STATOR COIL INSTALLATION

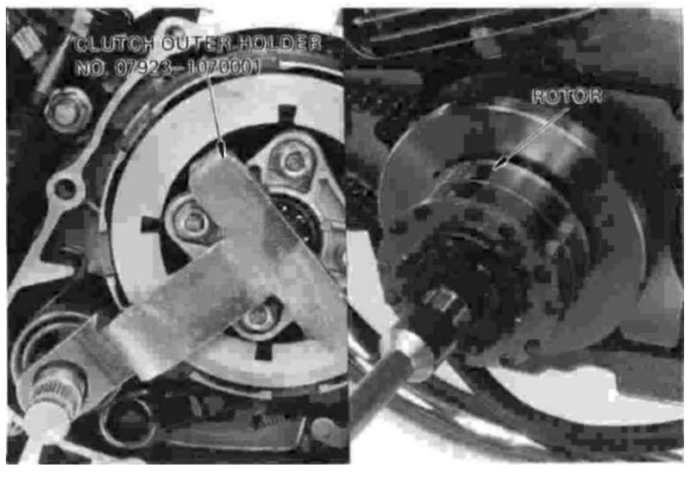
NOTE

Route each wire between cover and stator.



A.C. GENERATOR ROTOR REMOVAL

Drain the engine oil and remove the right crankcase cover. (See page 8-3.)
Block the clutch to prevent it from turning with a clutch outer holder and remove the rotor bolt.
Remove the spark advancer.



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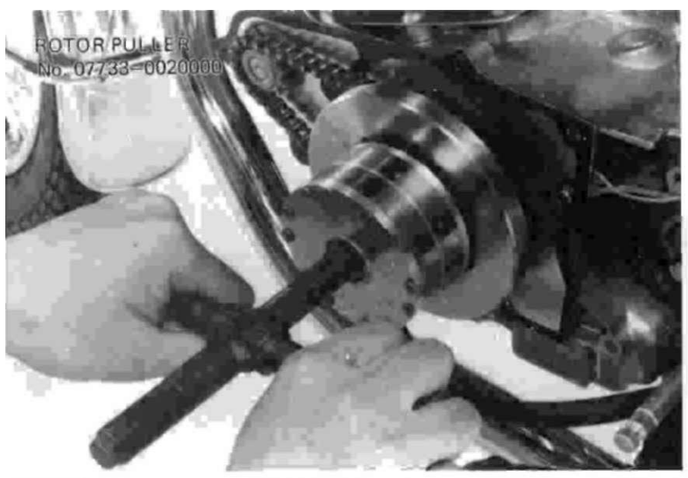

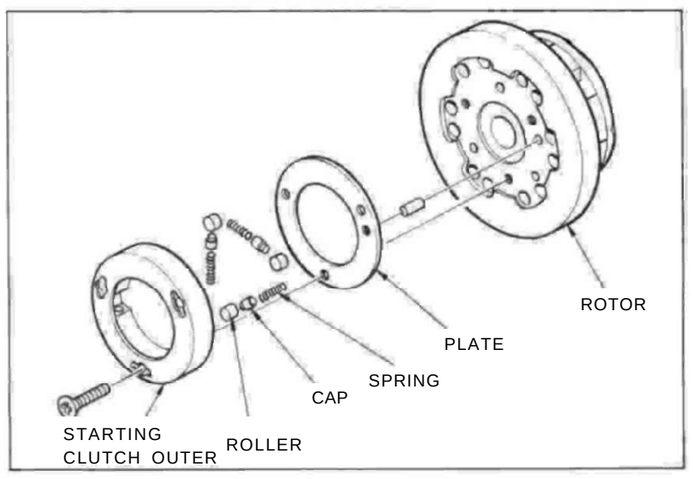

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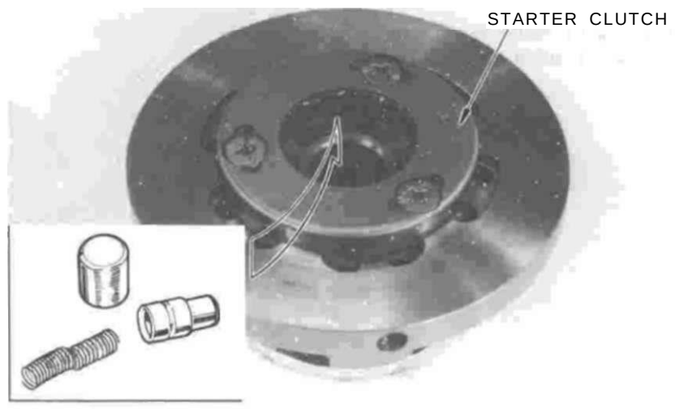
Disconnect the rollers to press the roller springs with a screwdriver.
Disassemble the spring caps and the roller springs.

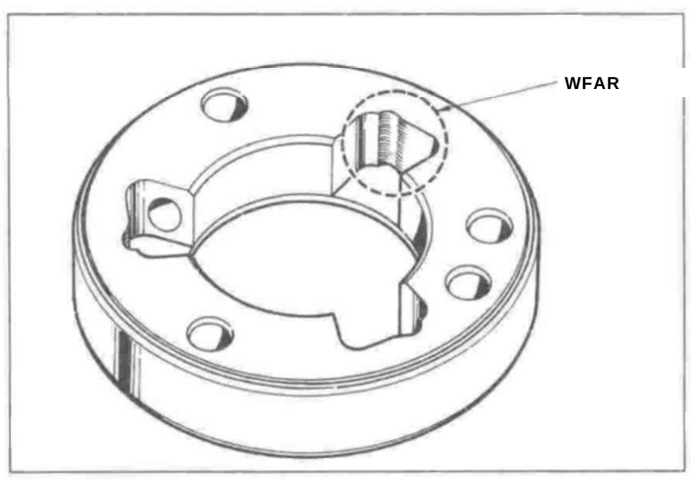
NOTE

Check all parts for wear, damage or deformation.



Remove the three clutch outer attaching screws with a shock driver.
Remove the starter clutch outer and side plate.

Check the starter clutch outer for wear.



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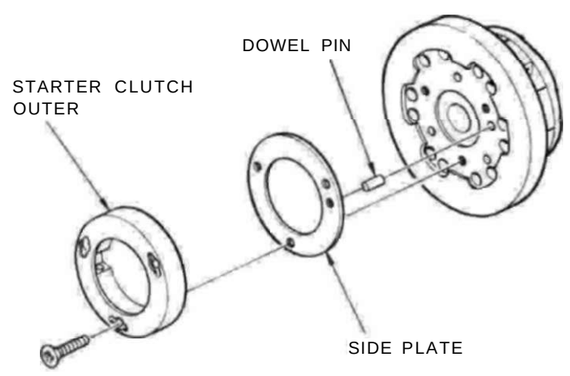
• STARTER CLUTCH REASSEMBLY

Install the dowel pin and side plate.

NOTE

Align the dowel pin with the side plate pin holes.

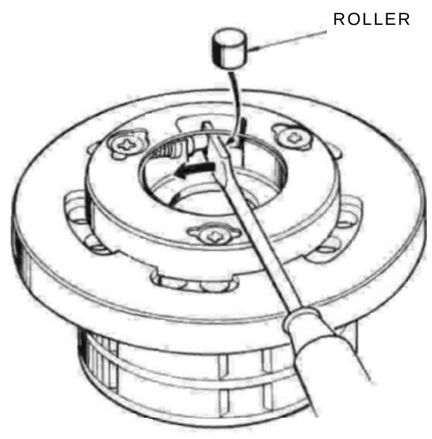


Install the clutch outer and tighten the screws.

NOTE

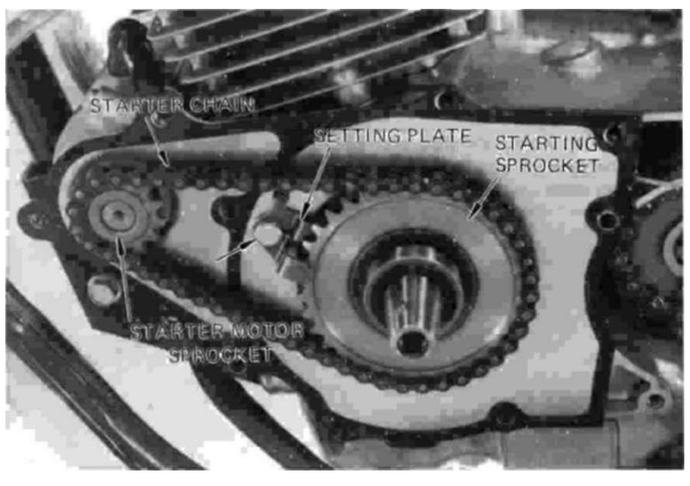
Apply locking agent at time of assembly.

Insert the springs, spring caps and rollers into the starter clutch outer.
Check the starter clutch for smooth operation.



STARTING MOTOR REMOVAL

Remove the left crankcase cover. (See page 9-5.)
Remove the rotor. (See page 9-5.)
Remove the starting sprocket setting plate.
Remove the starting sprocket, starter motor sprocket and starter chain.
Remove the left side spacer.



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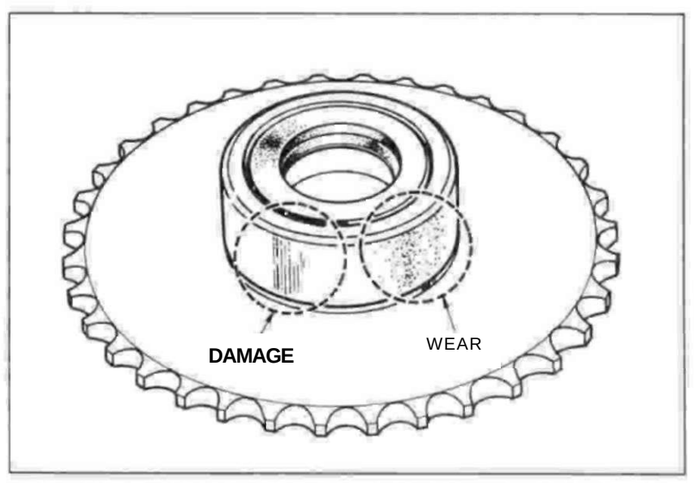
• STARTING SPROCKET INSPECTION

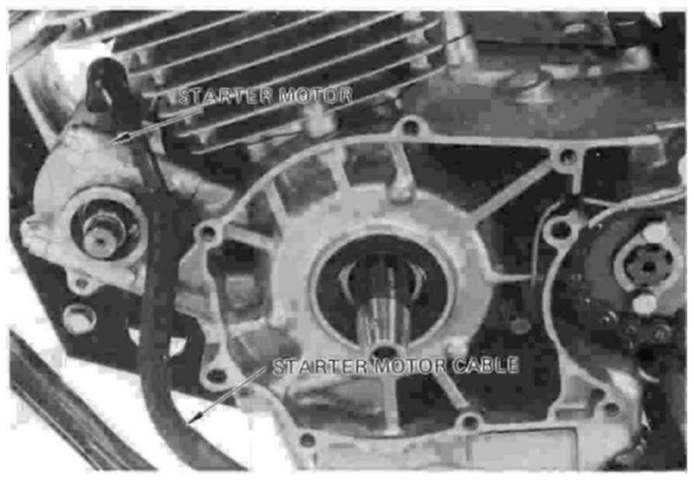
Check the starting sprocket for wear or damage.
Inspect the starting chain for wear or damage.



Disconnect the starter cable.
Remove the starter motor.

• STARTING MOTOR DISASSEMBLY/ASSEMBLY

Refer to section 16.

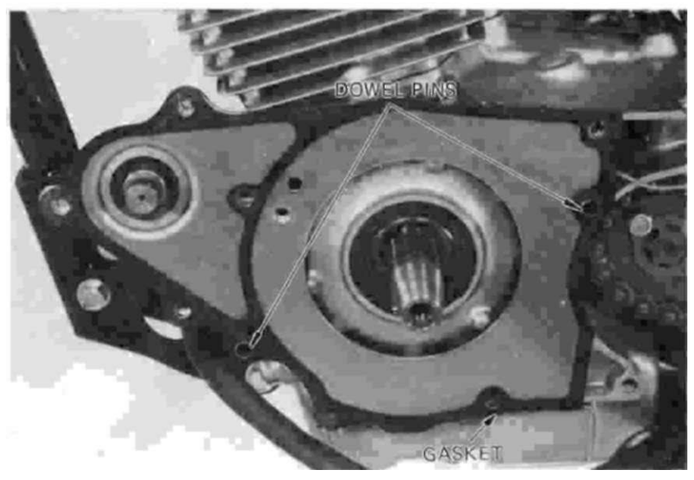


STARTING MOTOR INSTALLATION

Install the left side spacer.

NOTE

- Install the knock pins and gasket at the time of assembly.
- For cable routing, refer to page 1-11.



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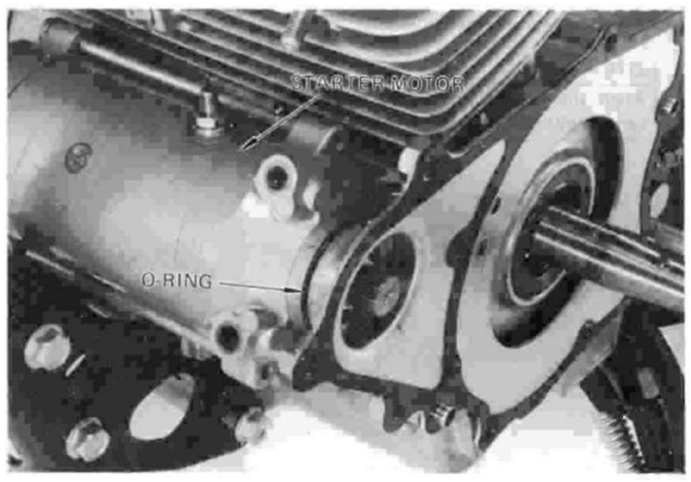
Install the starter motor.

NOTE

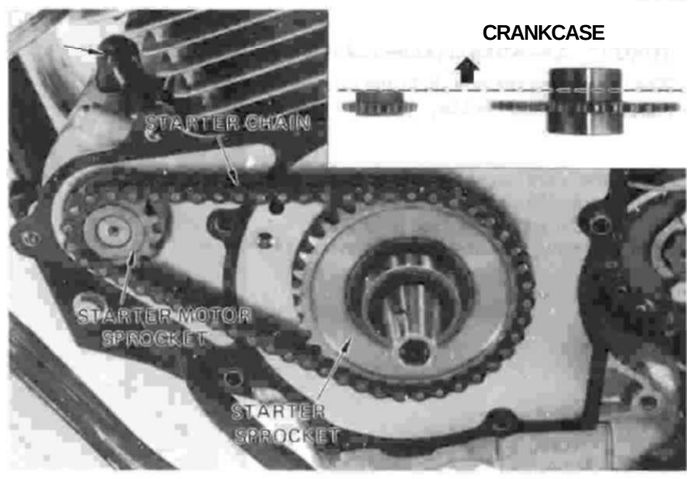
Install the O-ring at the time of assembly.



Install the starter chain, starter sprocket and starter motor sprocket at the same time. Install the sprocket setting plate.

NOTE

- Note the direction of sprockets.
- Turn the crankshaft counterclockwise and check sprocket for smooth operation.



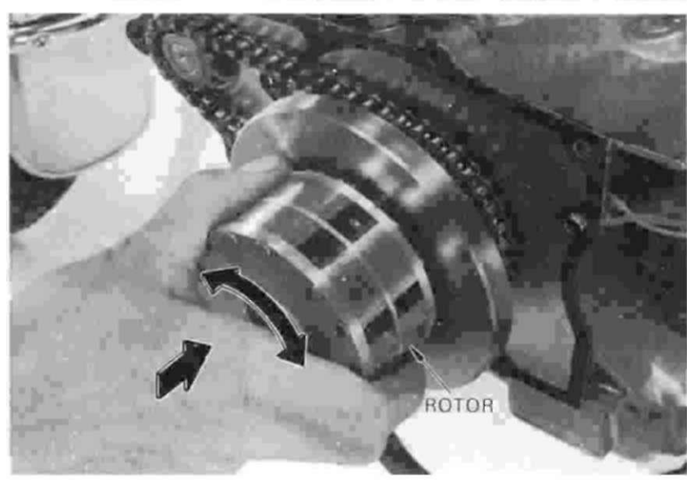
Route and connect the starter cable.

A.C. GENERATOR INSTALLATION

Install the rotor.

NOTE

- Align the knock pin with the groove of rotor.
- Do not fall the starting clutch rollers.



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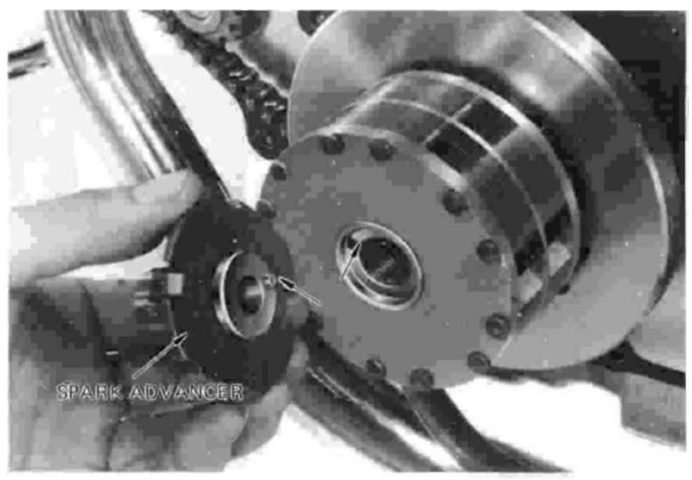
Install the spark advancer.

NOTE

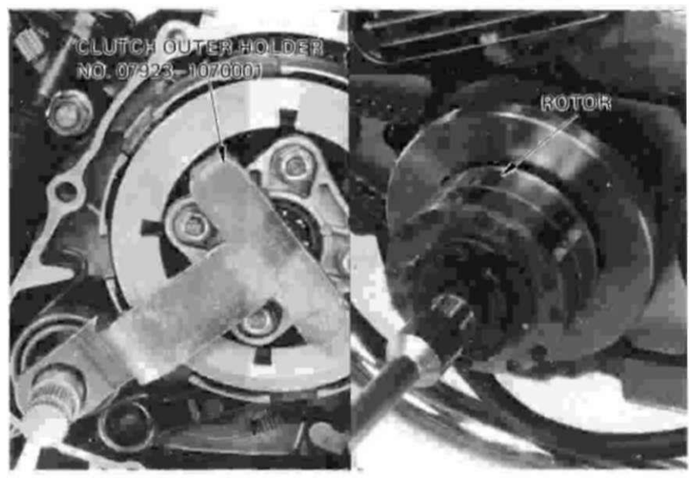
Align the knock pin on the spark advancer with the groove of rotor.



Tighten the rotor bolt.

TORQUE: 4.5-5.0 kg-m (32.5-36.2 ft-lb.)

When tightening the bolt, hold the clutch lifter plate with a clutch holder.



Install the right crankcase cover, kick pedal and right muffler.
Fill with the engine oil (See page 2-2).
After assembly, perform clutch adjustment.

LEFT CRANKCASE COVER INSTALLATION

Install the left crankcase cover, left crankcase rear cover, gear shift pedal and left muffler

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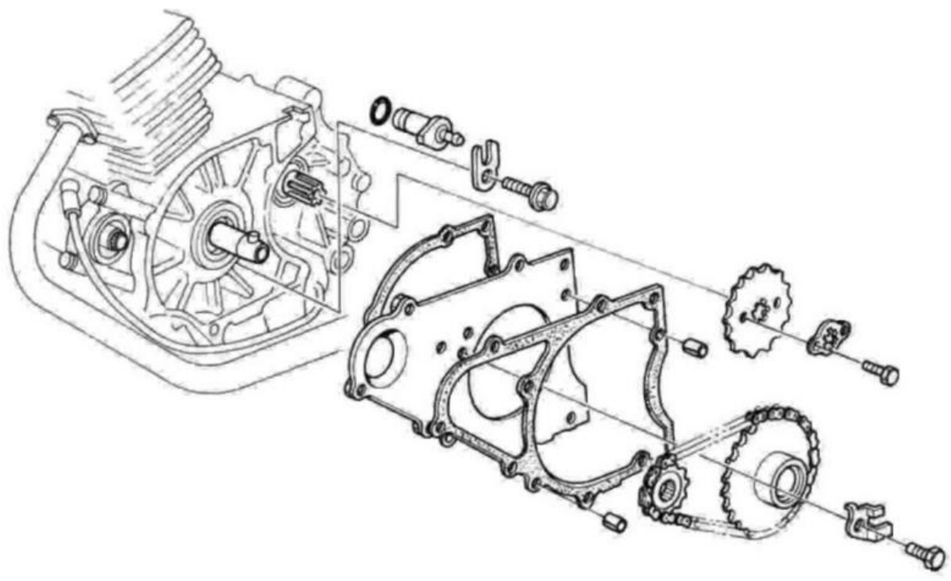

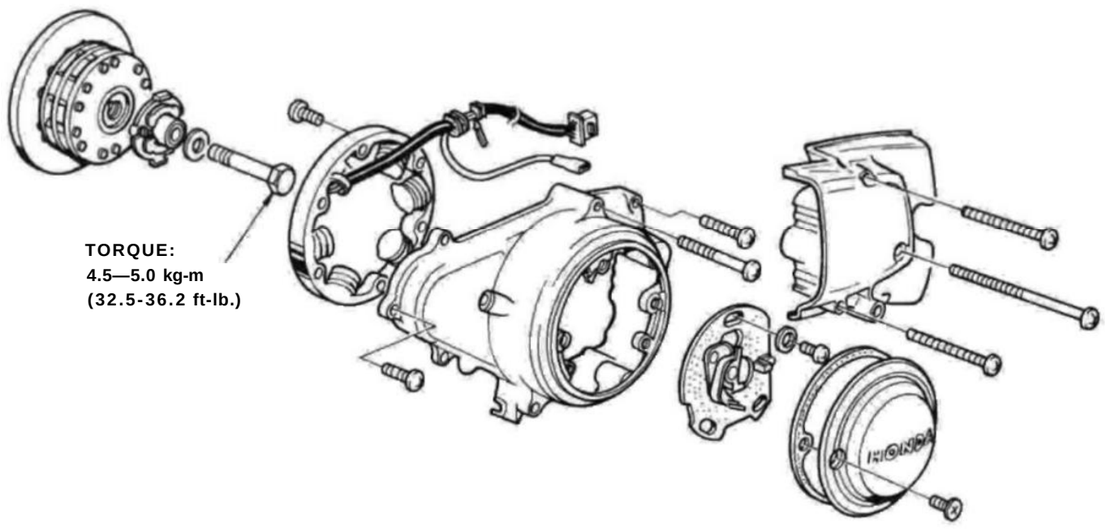
TORQUE:
4.5—5.0 kg-m
(32.5-36.2 ft-lb.)
HONDA

SERVICE INFORMATION	10-1
TROUBLESHOOTING	10-2
CRANKCASE DISASSEMBLY	10-3
TRANSMISSION REMOVAL	10-4
TRANSMISSION DISASSEMBLY	10-5
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BALL BEARING INSTALLATION	10-8
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TRANSMISSION ASSEMBLY	10-11
CRANKCASE ASSEMBLY	10-13

SERVICE INFORMATION

- **WORKING PRACTICE**

This section includes transmission and crankshaft repairs which require crankcase separation. Refer to the following topics for removal of the engine and other parts which must be removed before separating the crankcase:

- ENGINE REMOVAL . . . . . Section 5
- CYLINDER HEAD REMOVAL . . . . . Section 6
- CYLINDER . . . . . Section 7
- CLUTCH OIL PUMP/GEARSHIFT LINKAGE . . . . . Section 8
- A.C. GENERATOR/STARTER MOTOR . . . . . Section 9

- **TOOLS**

Special Tools

Bearing driver	Tool No. 07946-3710000
Driver handle	Tool No. 07949-6110000

Common Tools

Bearing driver (32x35)	Tool No. 07746-0010100
Bearing driver (42x47)	Tool No. 07746-0010300
Bearing driver (52x55)	Tool No. 07746-0010400
Driver pilot (15)	Tool No. 07746-0040300
Driver pilot (20)	Tool No. 07746-0040500
Driver pilot (35)	Tool No. 07746-0040800
Driver handle A	Tool No. 07749-0010000

- **TORQUES**

Crankshaft bolts and nut:	1.0-1.4 kg-m (7.2-10.1 ft-lb.)
Crankcase bolts:	1.0-1.4 kg-m (7.2-10.1 ft-lb.)

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- **SERVICE DATA**

ITEMS		STANDARD	SERVICE LIMIT
Shift fork	I.D.	12.000-12.018 mm (0.4724-0.4731 in.)	12.05 mm (0.4744 in.)
	End thickness	5.00-5.07 mm (0.1969-0.1996 in.)	4.70 mm (0.1850 in.)
Shift fork guide shaft	O.D.	11.976-11.994 mm (0.4515-0.4722 in.)	11.96 mm (0.4709 in.)
Crankshaft	Runout		0.1 mm (0.0039 in.)
	Connecting rod big end side clearance	0.1-0.4 mm (0.0039-0.0158 in.)	0.6 mm (0.0236 in.)
	Connecting rod big end radial clearance	0.004-0.012 mm (0.0002-0.0005 in.)	0.05 mm (0.0020 in.)

TROUBLESHOOTING

Hard Shifting
1. Shift forks bent
2. Shift fork guide shaft bent

Jumps Out Of Gear
1. Gear dogs worn
2. Shift shaft bent
3. Shift forks bent or damaged

Crankshaft Noise
1. Connecting rod big end bearing worn
2. Connecting rod bent
3. Crankshaft bearing worn

Transmission Noise
1. Transmission gear worn
2. Splined shaft worn

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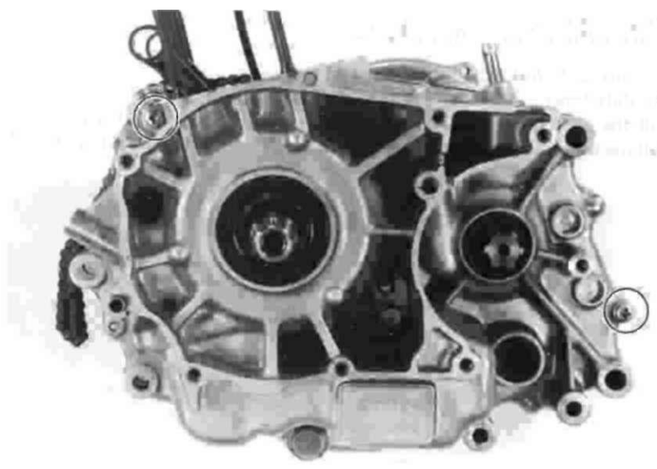
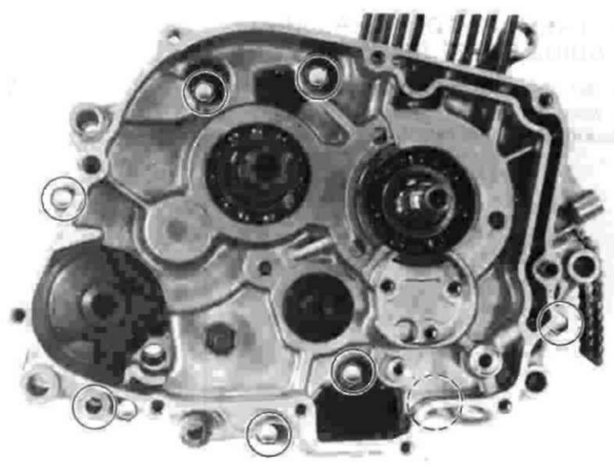
CRANKCASE DISASSEMBLY

Place the engine with the left crankcase upwards and remove the 6 mm screws.



Place the engine with the right crankcase uowardsand remove the setting bolts.

Remove the right crankcase.



• BALL BEARING INSPECTION

Replace the main shaft bearing, if it is noisy.

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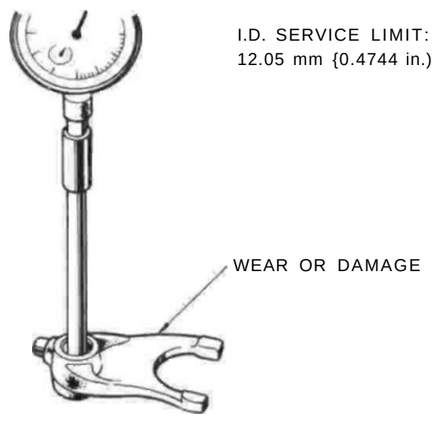
TRANSMISSION REMOVAL

Pull the shift fork guide shaft out and remove the shift forks.
Pull the shift drum out.
Pull the transmission gears out with both hands.

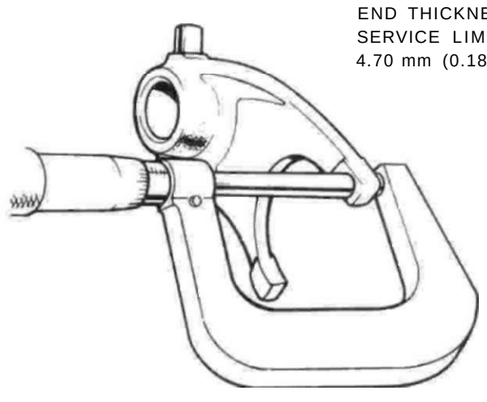
- GEARSHIFT FORK/GEARSHIFT GUIDE SHAFT INSPECTION

Inspect the shift forks and replace if broken or worn.
Measure each shift fork I.D.



I.D. SERVICE LIMIT:
12.05 mm {0.4744 in.)

Check each shift fork end thickness.



END THICKNESS
SERVICE LIMIT:
4.70 mm (0.1850 in.)

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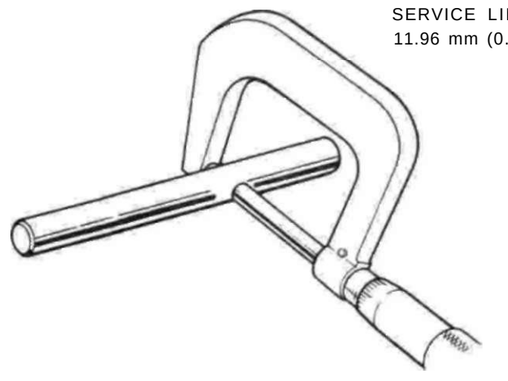
Measure the shift fork guide shaft O.D. in two directions at right angle to each other.

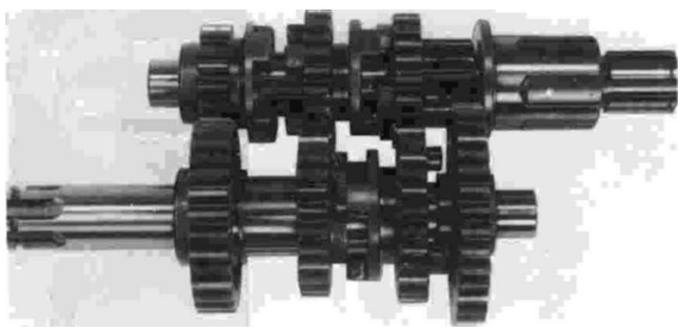


SERVICE LIMIT:
11.96 mm (0.4709 in.)

Check the gearshift drum for wear or damage.

TRANSMISSION DISASSEMBLY

Disassemble the transmission gears and inspect each gear for wear or damage.
Replace if broken or worn.



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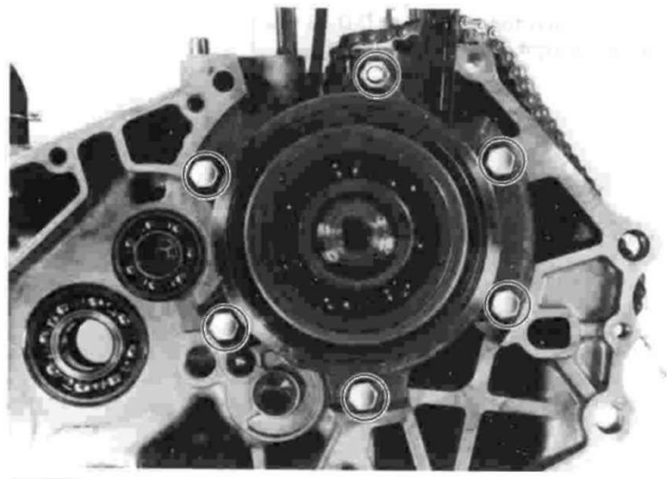
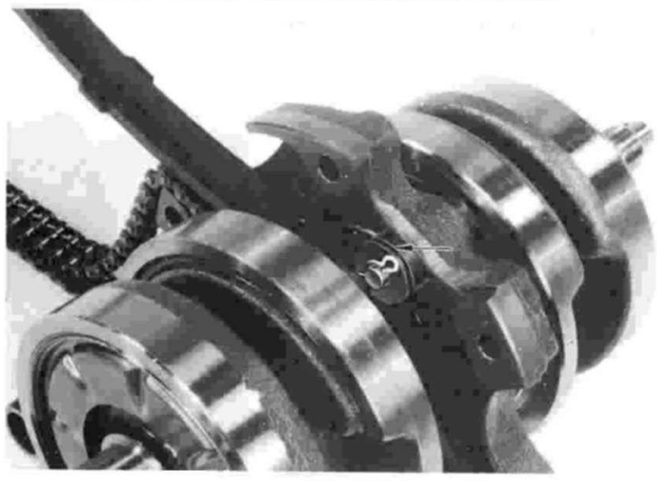
CRANKSHAFT REMOVAL

Remove the crankshaft after unscrewing the five setting bolts and nut.

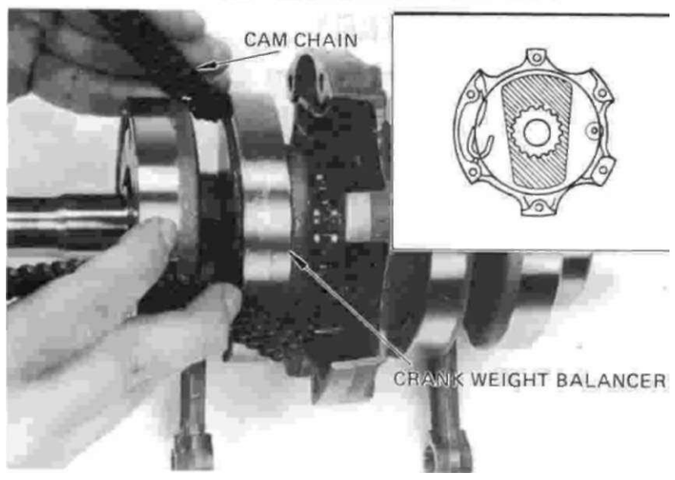


Pry off the lock pin and remove the plain washer.

Remove the tensioner arm.



Set the crank weight balancer to the position shown and remove the cam chain.



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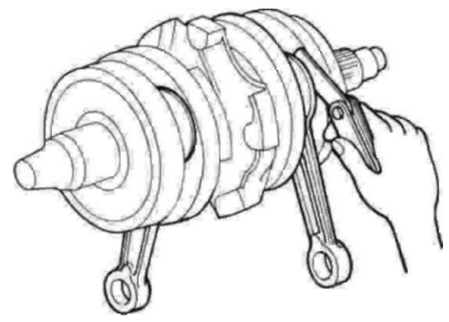
• CRANKSHAFT INSPECTION

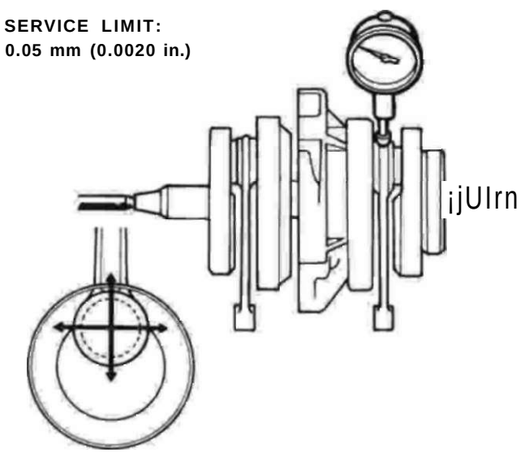
Measure the connecting rod big end side clearance.

SERVICE LIMIT:
0.6 mm 10.0236 in.)



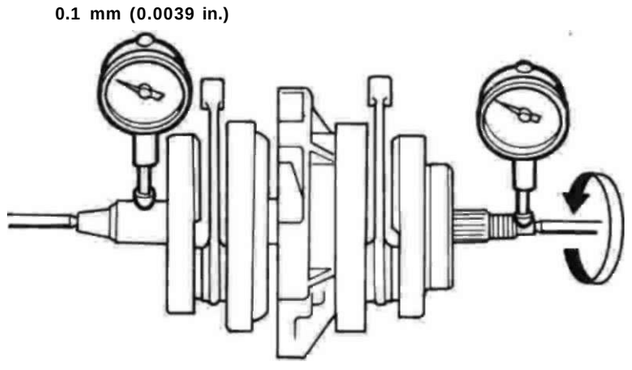
Measure the radial clearance at two different points across from each other as shown.

SERVICE LIMIT:
0.05 mm (0.0020 in.)



Measure runouts at points shown.
Actual bend is 1/2 of Total Indicator Reading.

SERVICE LIMIT:
0.1 mm (0.0039 in.)



(LEFT) (RIGHT)

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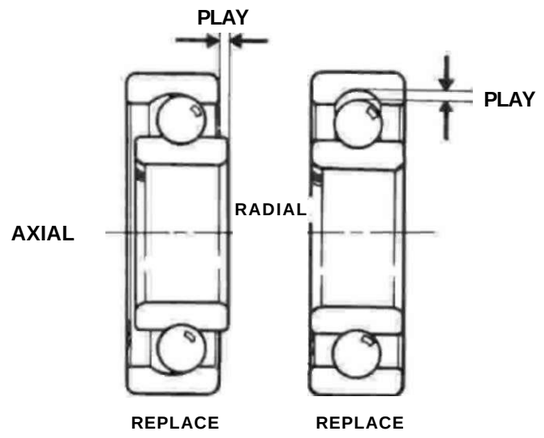
• CRANKSHAFT BEARING PLAY

Replace the bearing if it has excessive play or is noisy.



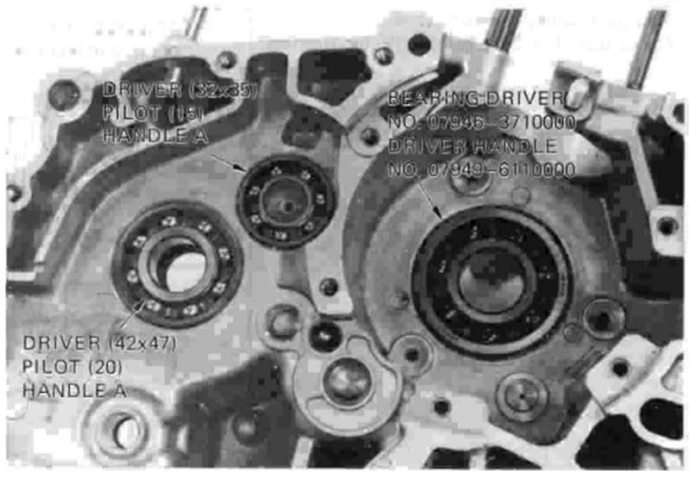
• LEFT CRANKCASE DISASSEMBLY

Remove the oil seal.
Remove the oil through plate by removing three screws.
Remove the crankshaft bearing.

BALL BEARING INSTALLATION

• LEFT CRANKCASE

Install the ball bearing with a bearing driver.



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Install the oil seal.

CA UTION

Do not drive the countershaft oil seal below the end of the crankcase as tha, will block up the oil passage in the shaft.

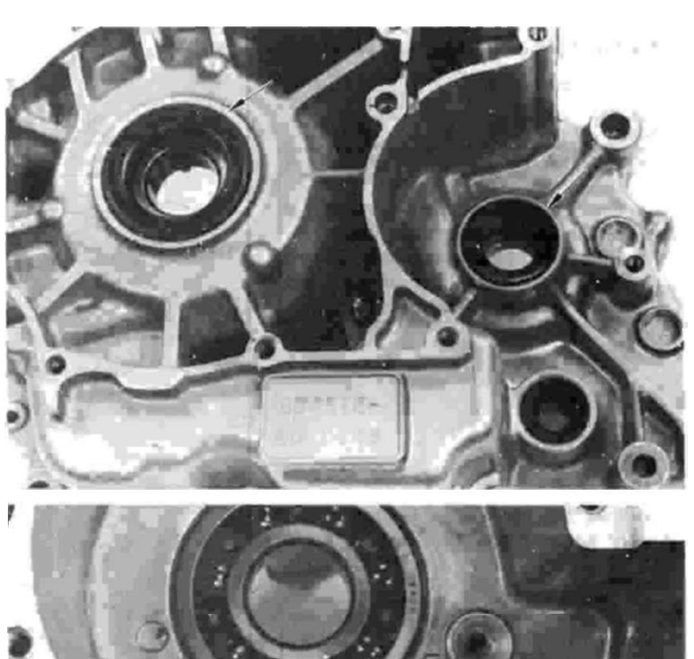
Install the O-ring and the oil through plate, Tighten the screws.

NOTE

Apply locking agent to the screws.

• RIGHT CRANKCASE

Install the bearing with a bearing driver.



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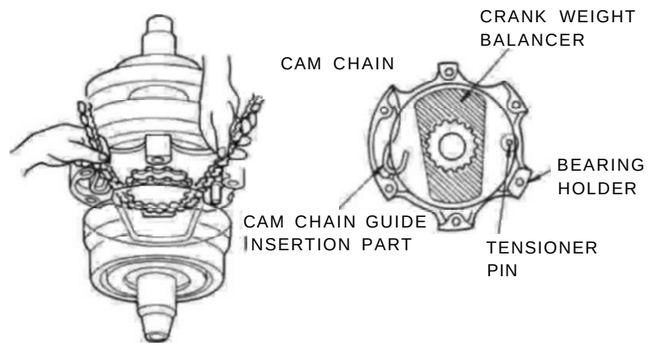
CRANKSHAFT INSTALLATION

Install the cam chain.

NOTE

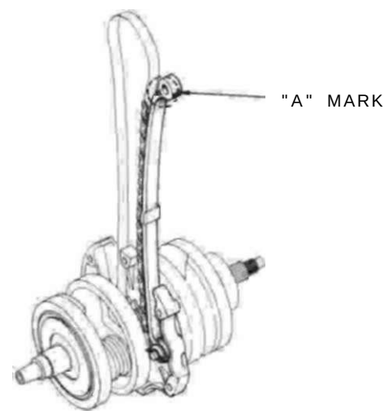
Set the crank weight balancer as shown.
Pass the cam chain between tensioner pin and crank weight balancer.
Install while holding the chain between cam chain guide insertion part and crank weight balancer.



Install the cam chain tensioner arm with the slippery surface facing the chain.

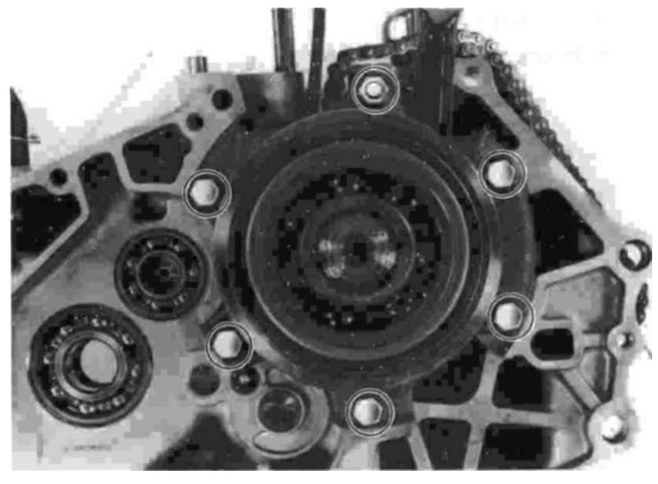
NOTE

Install with the "A" mark facing the cylinder head.



Slide the crankshaft into the left crankcase aligning the stud on the case with the hole in the bearing holder as shown.
Tighten the nut and five bolts.

TORQUE. **1.0—1.4 kg-m (7.2-10.1 ft-lb.)**



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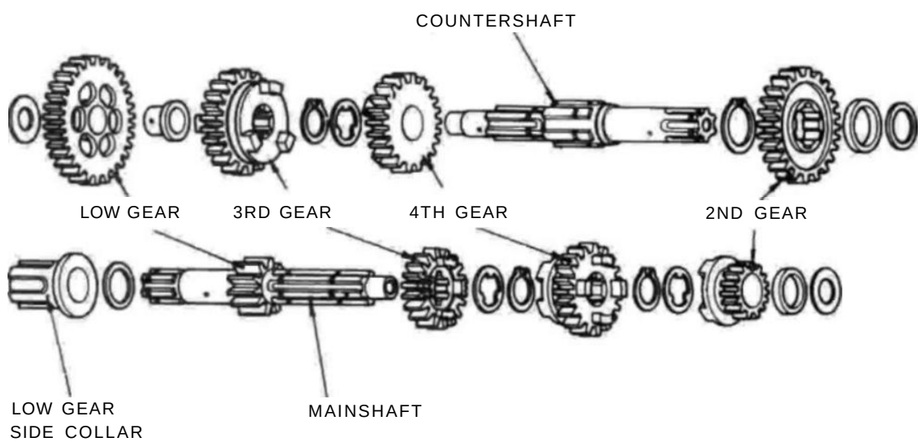
TRANSMISSION ASSEMBLY

NOTE

After assembly, apply oil to each gear and shaft.



Assemble the mainshaft and the countershaft shown above.

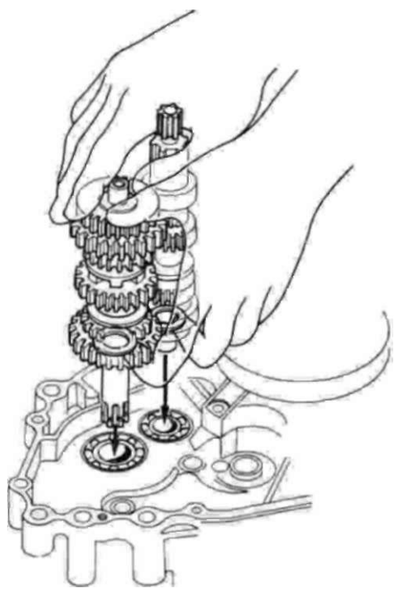
NOTE

After assembly, check each gear for smooth operation.
Install the circlips into the groove completely.

Slide the mainshaft and countershaft into the left crankcase.

NOTE

- Install the mainshaft and countershaft at the same time.
- Hold the thrust washers with fingers during operation.



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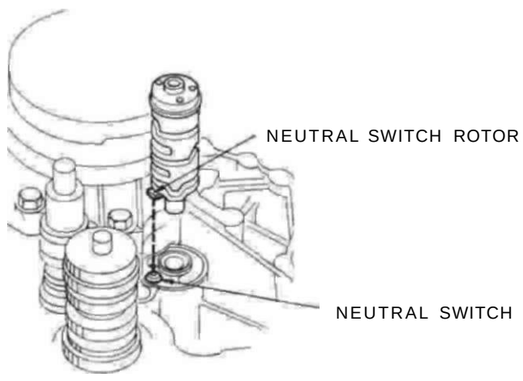
Install the shift drum into the left crankcase.

NOTE

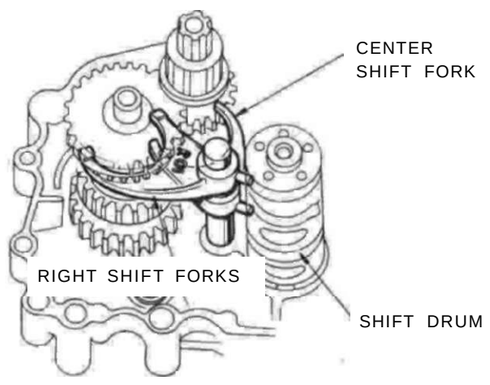
Align the neutral switch rotor with the neutral switch on the left crankcase.



Insert the shift forks in the grooves of the shift drum,

NOTE

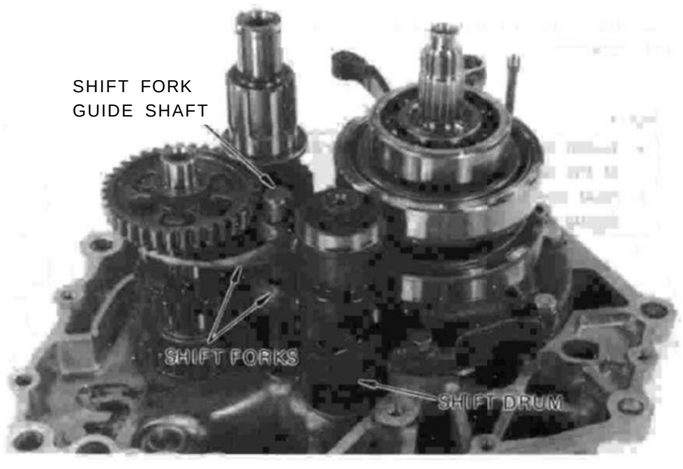
Install with the right fork facing the mark up and center fork facing the mark down.



Insert the shift guide shaft into the left crankcase through the holes in the shift forks.

NOTE

After assembly, inspect each gear for smooth operation by rotating the main sh8ft.



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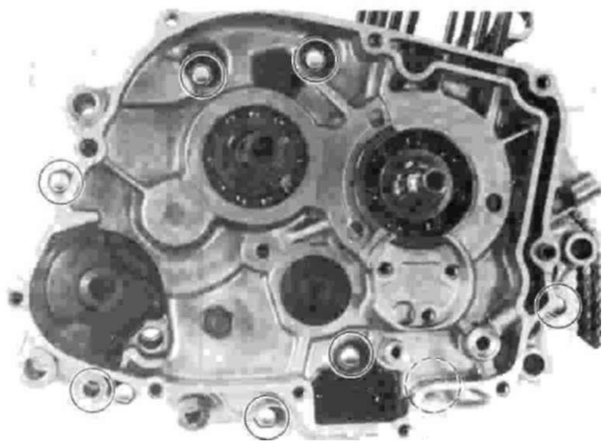
CRANKCASE ASSEMBLY

Insert the dowel pins and install the gasket correctly.

Install the right crankcase on the left crankcase.

NOTE

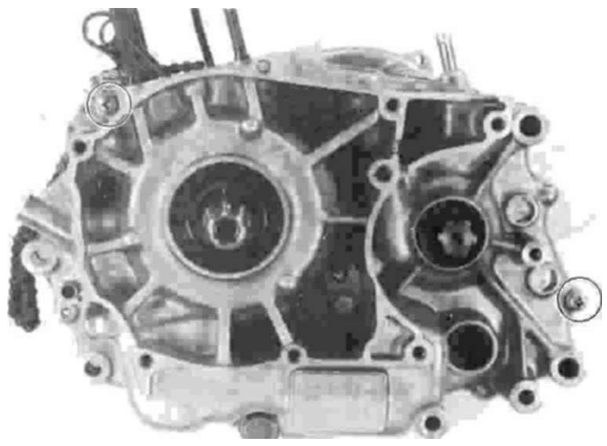
When installing, do not dislodge the gasket.



Tighten the oolts.

TORQUE: 1.0-1.4 kg-m (7.2-10.1 ft-lb.)

Place the engine with the left crankcase up and screw in the 6 mm screws.



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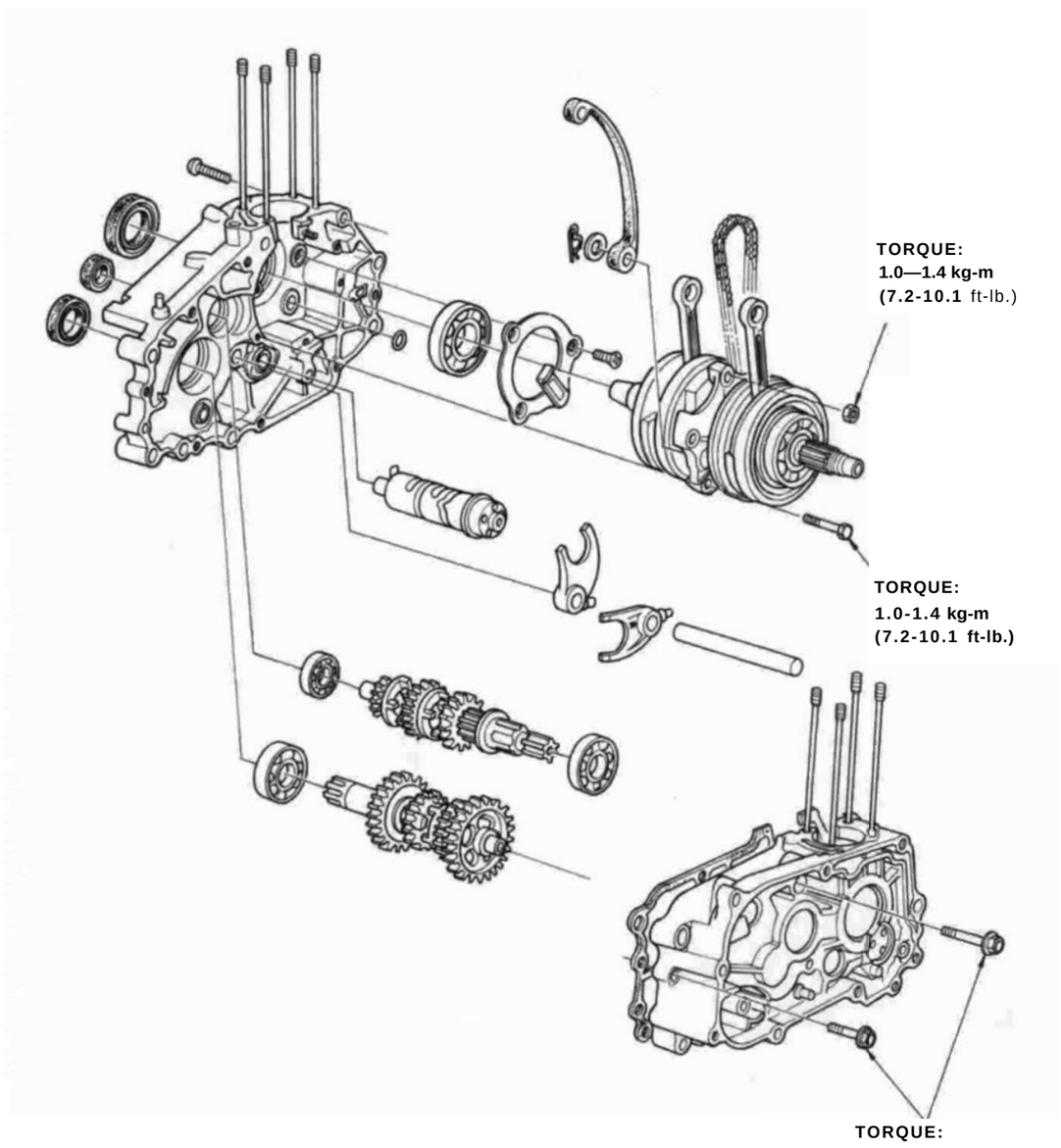

TORQUE:
1.0—1.4 kg-m
(7.2-10.1 ft-lb.)

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(7.2-10.1 ft-lb.)

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HONDA CM185T

11. STEERING/FRONT WHEEL/ FRONT SUSPENSION

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STEERING STEM	11-21

SERVICE INFORMATION

• WORKING PRACTICE

This section describes removal, installation and servicing of the front wheel, the front fork and the handlebar.
This vehicle does not have a center stand. Support the engine with a jack or a block to raise the front wheel before removing it.

• SPECIFICATION

Front fork oil capacity:	125 cc (4.2 oz.)
	98 cc (3.3 oz.) at draining

• TOOLS

Special Tools		
6 mm Allen wrench		Tool No. 07917-3230000
Ball race driver		Tool No. 07944-1150001
Common Tools		
Pin spanner		Tool No. 07702-0010000
Steering stem wrench	(30x32)	Tool No. 07716-0020400
Extension bar		Tool No. 07716-0020500
Bearing driver	(42x47)	Toot No. 07746-0010300
Driver handle A		Tool Nc. 07749-0010000
Driver pilot	(15)	Tool No. 07746-0040300
Fork seal driver body		Tool No. 07747-0010100
Driver attachment	(C)	Tool No. 07747-0010400

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• TORQUE

Steering stem nut'	6.0-7.0 kg-m (43.4-50.6 ft-lb.)
Handlebar upper holder bolt:	2.0-2.5 kg-m (14.5-18.1 ft-lb.)
Fork top bridge bolt:	2.0-2.5 kg-m (14.5-18.1 ft-lb.)
Fork bottom bridge bolt:	2.0-2.5 kg-m (14.5-18.1 ft-lb.)
Front axle nut:	4.0-5.0 kg-m (28.9-36.2 ft-lb.)
Brake cam bolt:	0.8-1.2 kg-m (5.8-8.6 ft-lb.)
Fork bolt:	2.5-3.0 kg-m (18.1-21.7 ft-lb.)
Fork socket bolt:	1.8-2.3 kg-m (13.0-16.7 ft-lb.)

SERVICE DATA

ITEMS		STANDARD	SERVICE LIMIT
Axle shaft bend		----------	0.2 mm (0.0079 in.)
Wheel rim runout	Radial	----------	2.0 mm (0.0787 in.)
	Axial	----------	2.0 mm (0.0787 in.)
Brake lining thickness		4.0 mm (0.1575 in.)	2.0 mm (0.0787 in.)
Brake drum I.D.		140.0 mm (5.5118 in.)	141.0 mm (5.5512 in.)
Front fork	Spring free length	504.6 mm (19.9 in.)	495 mm (19.5 in.)
	TubeO.D.	30.925-30.950 mm (1.2175-1.2185 in.)	30.87 mm (1.2154 in.)
	Slider I.D.	31.042-31.104 mm (1.2221-1.2246 in.)	31.165 mm (1.2270 in.
	Tube run-out	----------	0.2 mm (0.0079 in.)

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TROUBLESHOOTING

Wobble or Vibration in Motorcycle
1. Loose axle
2. Loose wheel bearings
3. Loose steering stem nut or bearings
4. Unbalanced tire and wheel
5. Loose spokes
6. Bent wheel
7. Excessive lateral runout in wheel
8. Bent fork

Hard Steering
1. Low tire pressure
2. Steering top thread nut too tight
3. Faulty steering stem bearings
4. Insufficient lubrication in steering stem bearings
5. Steering stem bent
6. Faulty cone race or ball race

Steers to One Side or Does Not Track Straight
1. Bent fork
2. Bent axle
3. Forks installed in triple crown incorrectly *
4. Wheel installed incorrectly

Hard Front Suspension
1. Incorrect weight fluid in front forks
2. Clogged fork hydraulic passages
3. Fork sliders binding on fork legs

Soft Front Suspension
1. Incorrect weight fluid in front forks
2. Too much clearance inside forks
3. Broken fork spring(s)

Suspension Noise
1. Incorrect fluid level in forks
2. Broken parts in forks
3. Steering stem nut too loose
4. Loose axle

Front Forks Leaking
1. Faulty fork seals
2. Too much fluid in forks
3. Incorrect weight fluid in forks
4. Fork tubes pitted or scratched

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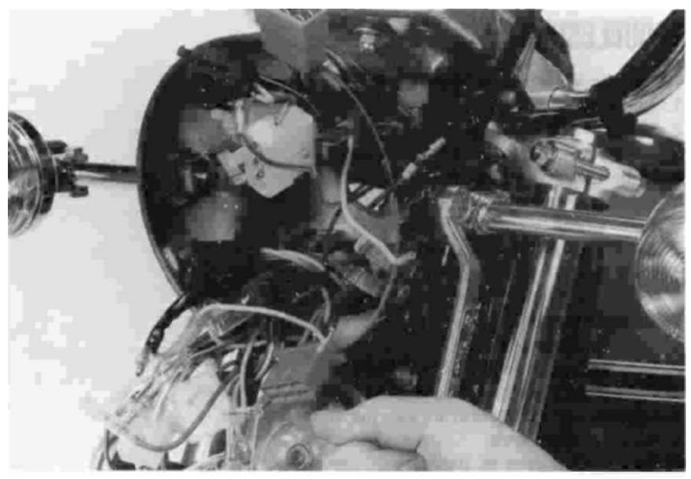
HEADLIGHT



• HEADLIGHT CASE REMOVAL

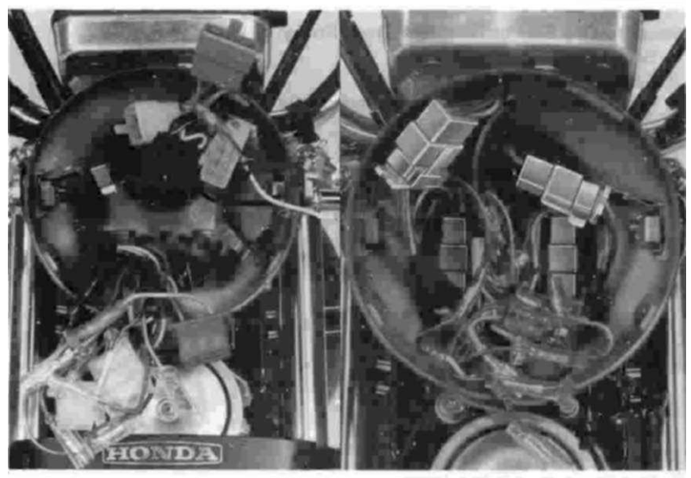
Remove the headlight and disconnect each coupler and connector

NOTE

Do not cut the wires.

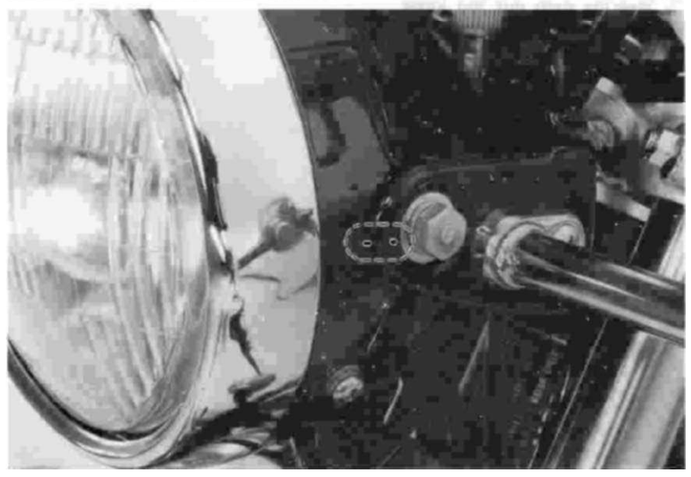
Remove the headlight case from headlight bracket by unscrewing the bolts.

• WIRING IN THE HEADLIGHT CASE



Run each wire through the holes of headlight case.
The wire and breather harnesses should be passed through lower hole.
Connect the wires color-to-color and set each coupler into the holder in the headlight case as shown.

• HEADLIGHT CASE INSTALLATION



Align the lines on the headlight case with the punch marks on the headlight brackets.

NOTE

After assembly, inspect each switch operation.

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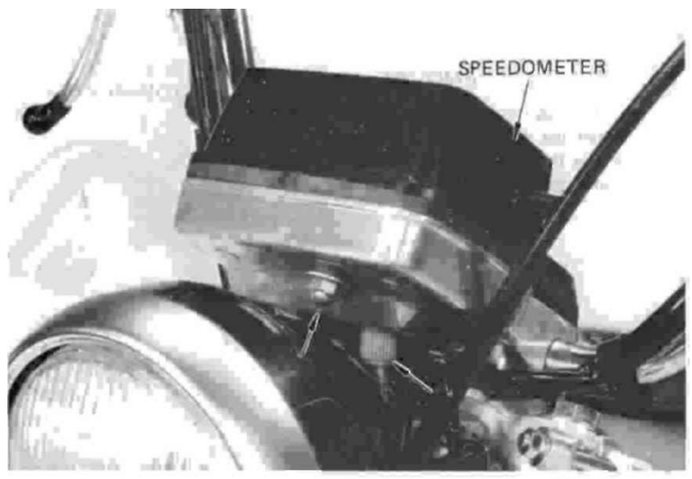
SPEEDOMETER



• SPEEDOMETER REMOVAL

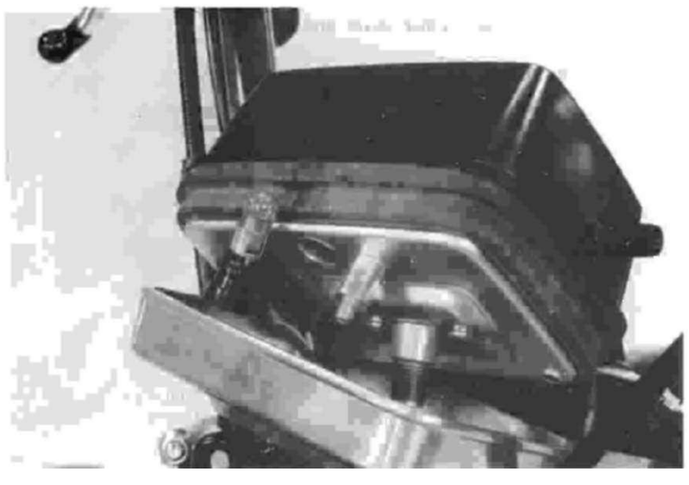
Unscrew the cap nut under the speedometer.
Remove the cable from the speedometer.
Remove the headlight and disconnect the speedometer wire.
Pull off the speedometer.

• IGNITION SWITCH REMOVAL

Remove the headlight and pull off the ignition switch coupler.
Pull off the handlebar holder cover.
Remove the handlebar holder, lift the handlebar and remove the ignition switch.

• METER BULB REPLACEMENT

Remove the speedometer and pull out the socket for each bulb.
Replace the bulbs.
Install the speedometer.



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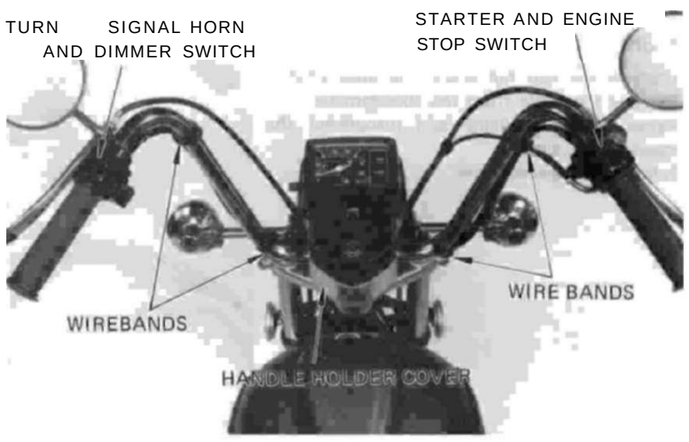
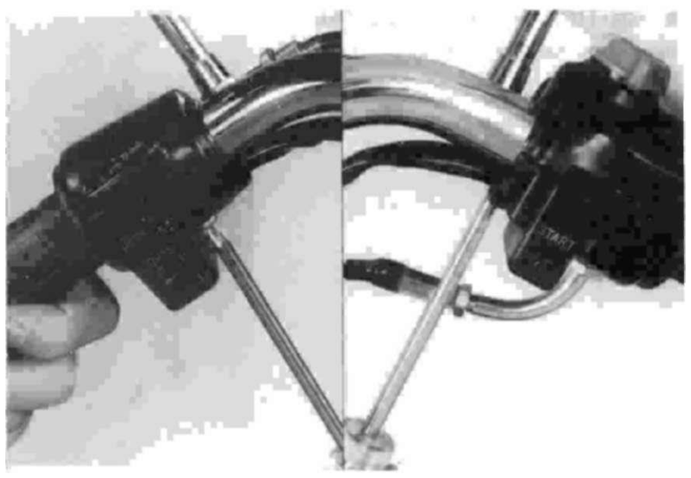
HANDLEBAR

• HANDLEBAR REMOVAL

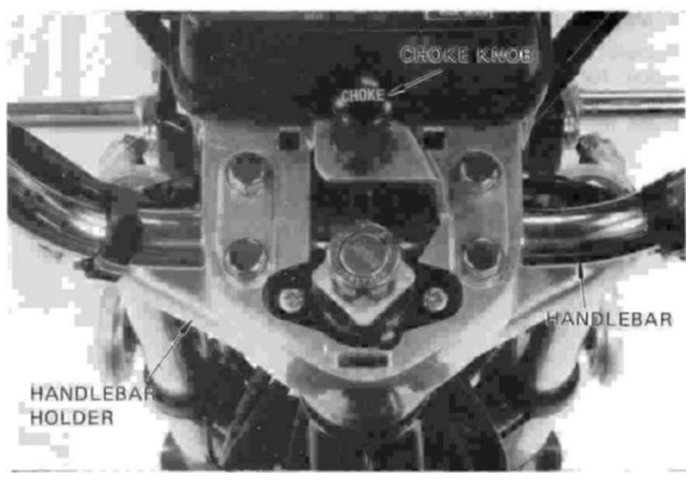
Loosen the two screws at the starter switch and remove the wire band.
Remove the throttle grip and switch with the front brake cable and throttle cable.



Remove the two screws at the lighting and horn switch.
Remove the wire harness band.
Remove the switch and the clutch cable.



Remove the handlebar holder cover and the handlebar holder.
Pull up the handlebar.



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• HANDLEBAR INSTALLATION

Place the handlebar on the lower holder.

NOTE

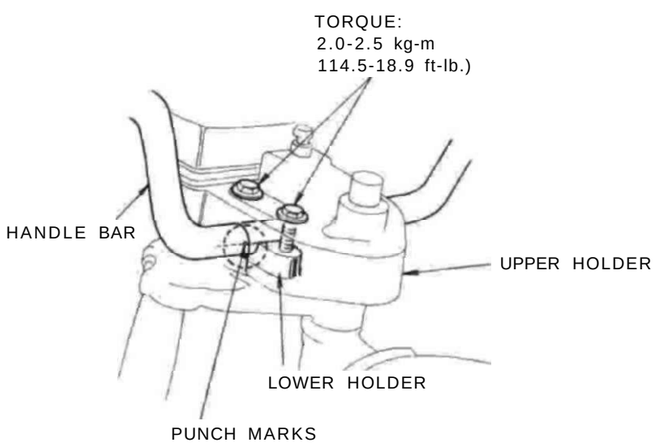
Align the punch marks on the handlebar with the top face of the lower holder.

Install the upper holder.
Tighten the holder bolts.

TORQUE: 2.0-2.5 kg-m (14.5-18.1 ft-lb.)

NOTE

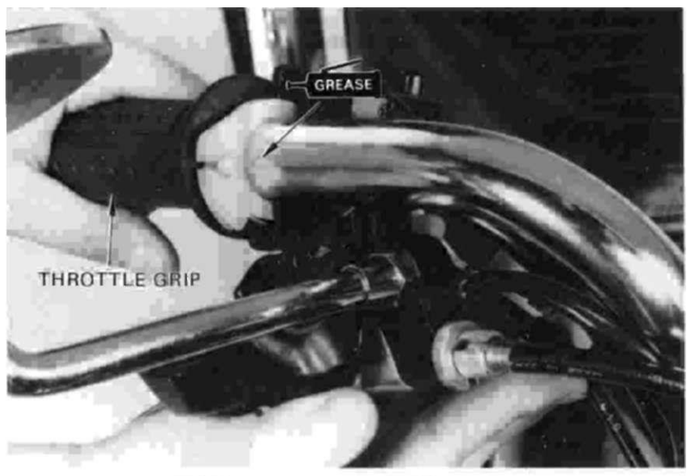
Tighten the forward bolts first.



Grease the sliding face of throttle grip.
Install the throttle grip and the starter switch.

NOTE

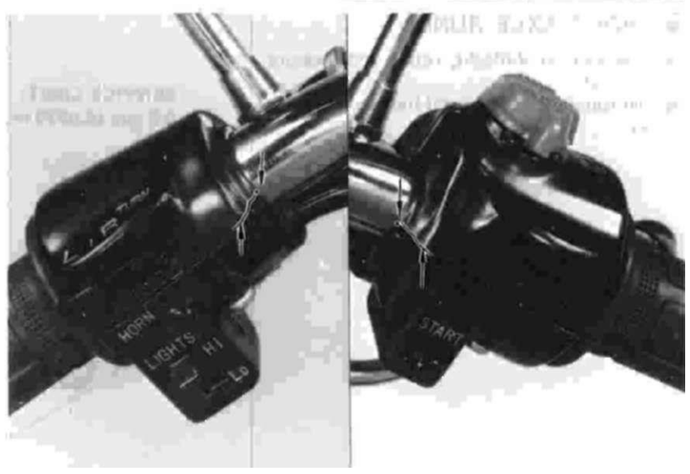
Align the slit of the starter switch housing with punch mark on the handlebar.
Tighten the forward screw first.



Install the turn signal and horn switch.

NOTE

Align the slit of the switch housing with punch mark on the handlebar.
Tighten the forward screw first.



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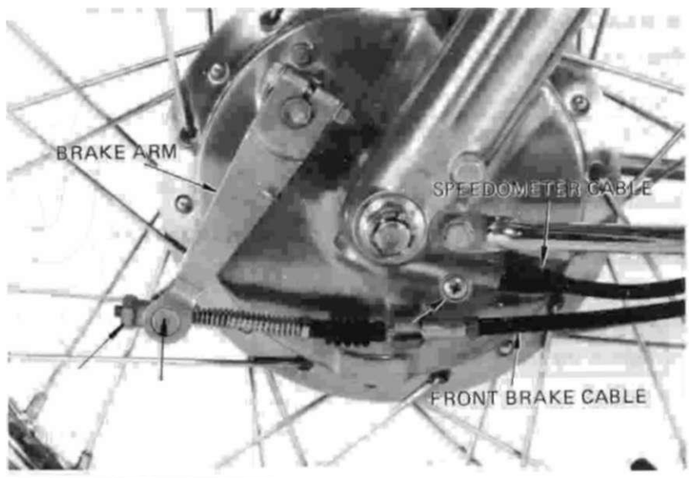
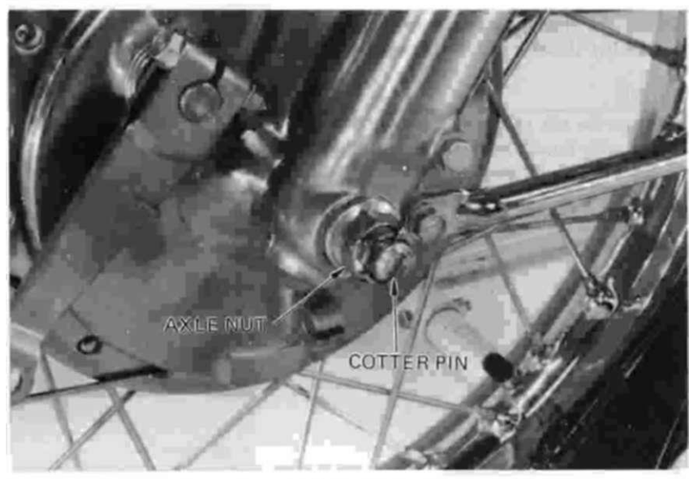
FRONT WHEEL

• FRONT WHEEL REMOVAL

Place a block under the engine so the wheel is free.
Remove the retaining screw and disconnect the speedometer cable.
Remove the adjusting nut and the brake arm pin, and disconnect the brake cable.



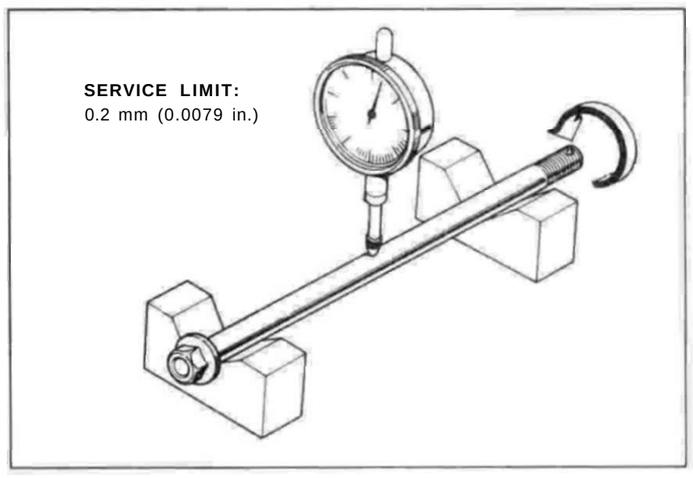
Pry off the cotter pin and remove the axle nut. Pull the axle shaft out and remove the front wheel.



• FRONT AXLE RUNOUT

Set the axle in Vblocks, rotate and measure the runout.
Actual runout is 1/2 of Total Indicator Reading (TIR).

SERVICE LIMIT:
0.2 mm (0.0079 in.)



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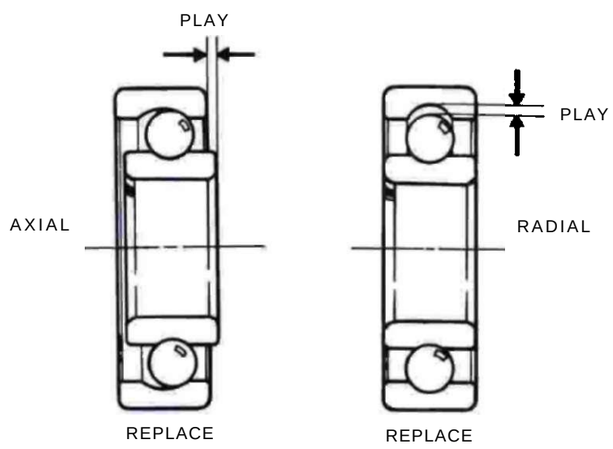
• FRONT WHEEL BEARING INSPECTION

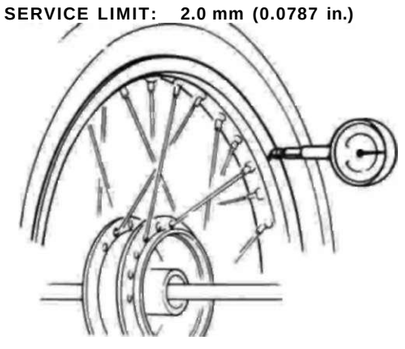
Check wheel bearings by placing the wheel on a trueing stand and spinning the wheel by hand. Replace the bearings if they are noisy or have excessive play.



• WHEEL RIM RUNOUT

Check rim runout on a trueing stand. Spin the wheel by hand and read the runout using a dial indicator.

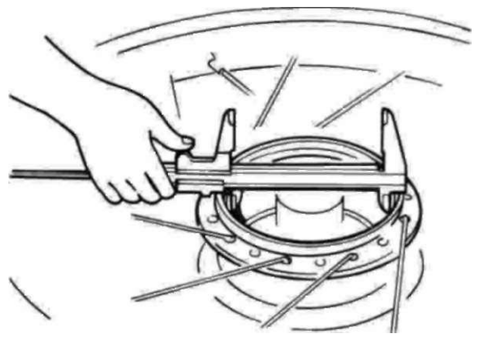
RADIAL
SERVICE LIMIT: 2.0 mm (0.0787 in.)
AXIAL
SERVICE LIMIT: 2.0 mm (0.0787 in.)



• FRONT BRAKE DRUM I.D.

Remove the brake panel from the front wheel. Inspect the brake drum I.D.

I.D. SERVICE LIMIT: 141.0 mm (5.5512 in.)



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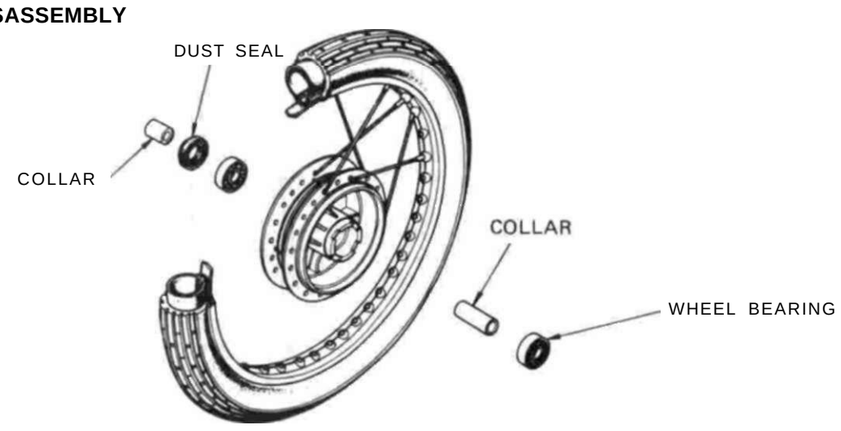
FRONT WHEEL DISASSEMBLY



• FRONT WHEEL ASSEMBLY

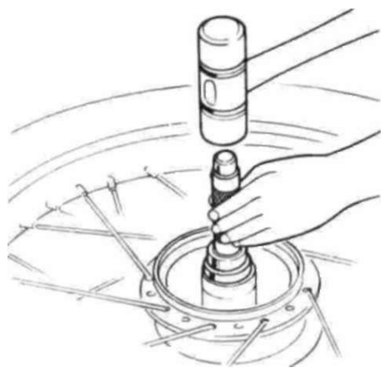
Pack all front wheel bearing cavities with grease. Install the bearing on each side with a bearing driver.

NOTE

Do not allow the bearing to tilt while driving.
Install the bearing with the sealed end facing the outside.

WARNING

Avoid getting grease on the inside face of the brake drum.



Grease the inside of the dust seal.
Install the dust seal and the collar on right side of front wheel hub.

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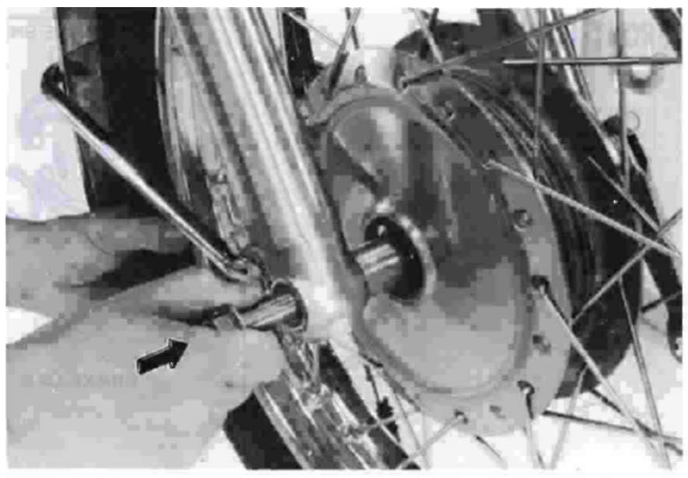
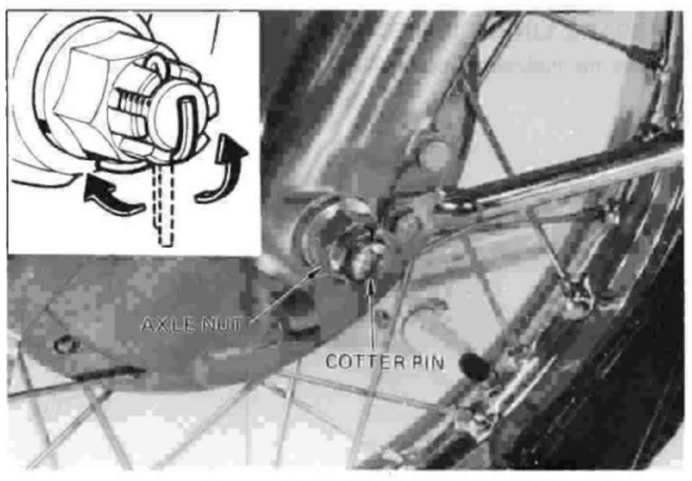
• FRONT WHEEL INSTALLATION

Install the brake panel into the front wheel.
Install the axle shaft from the right side.

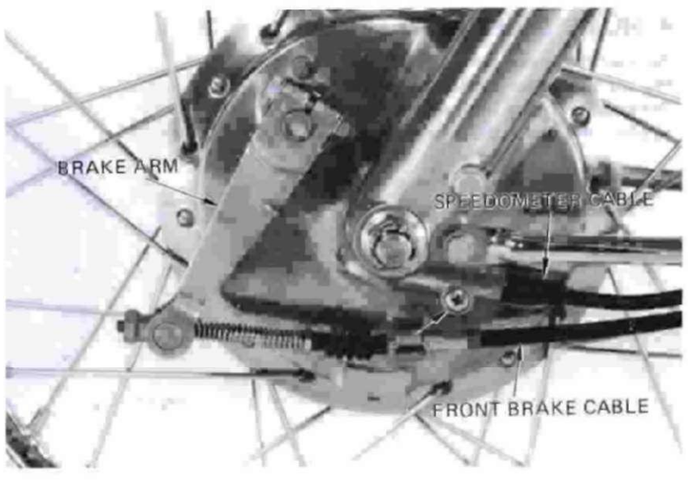


Tighten the axle nut and install the cotter pin.
Spread the cotter pin ends as shown.

TORQUE. 4.0-5.0 kg-m (28.9-36.2 ft-lb.)



Install the speedometer cable.
Install the front brake cable through the brake arm, and adjust the brake.
Check the brake lever free play and inspect the speedometer operation.



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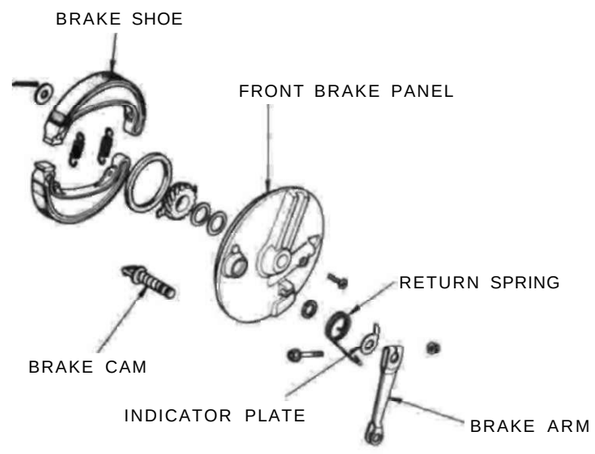
FRONT BRAKE PANEL

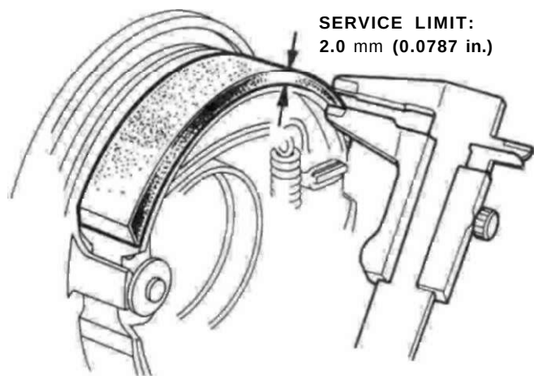
NOTE

Apply grease to the speedometer gear when assembling.



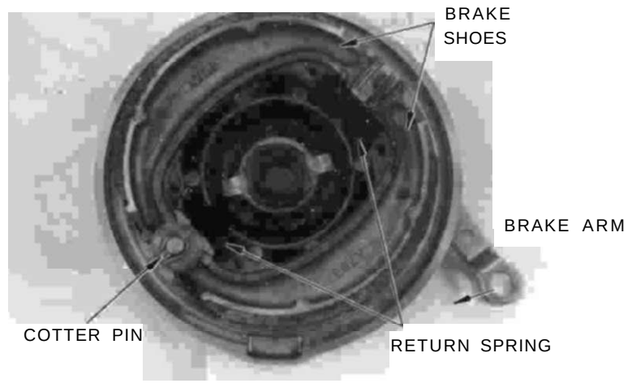
• BRAKE LINING INSPECTION

Inspect the thickness of brake linings.



• BRAKE SHOES REPLACEMENT

Remove the brake arm.
Pry off the cotter pin and remove the washer.
Remove the brake shoe return springs.
Replace the brake shoes as a set.



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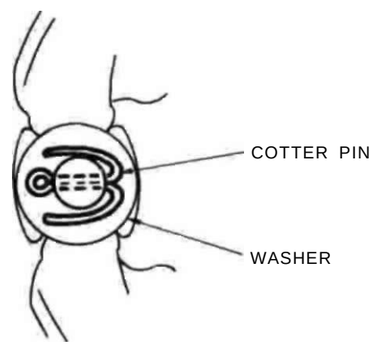
Grease the sliding surface of the brake cam and install.
Install the return springs on the brake shoes.
Install the washer.
Insert the cotter pin and spread the ends as shown.

WARNING

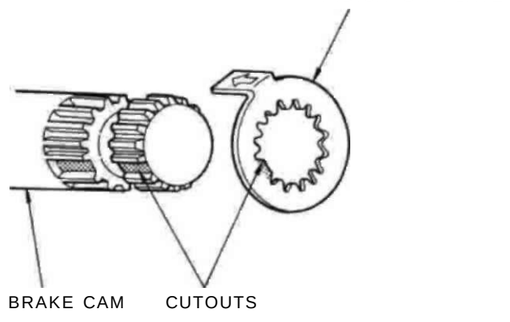
A void getting grease on the brake lining.



Install the dust seal and the indicator pla.te on brake cam.

NOTE

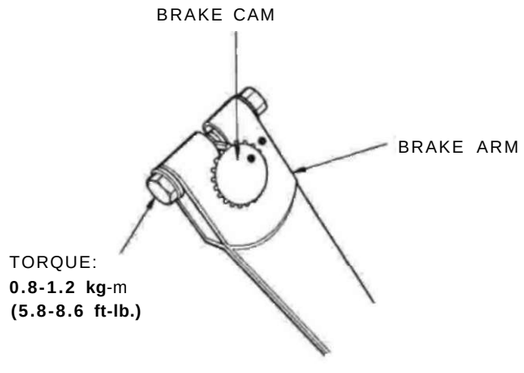
Align the cutouts.



Install the return spring and brake arm.
Tighten the brake arm bolt and nut.

NOTE

Align the punch marks.



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FRONT FORK

• FRONT FORK REMOVAL

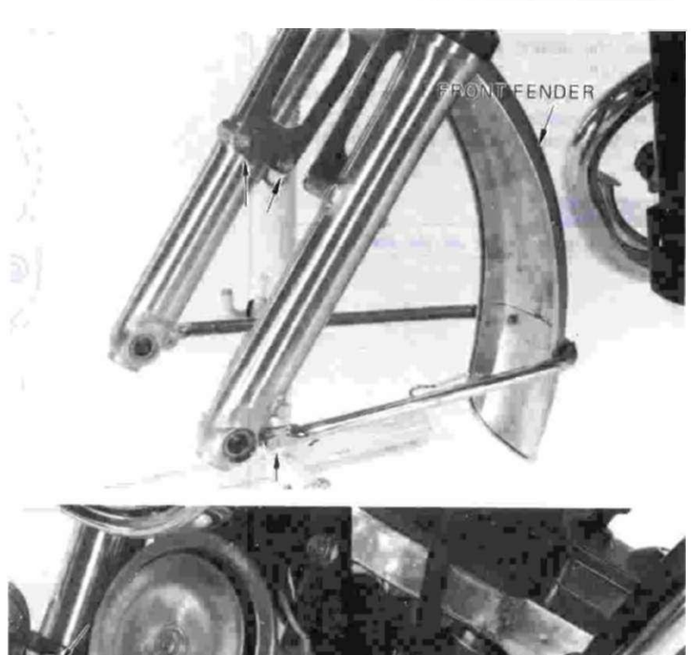
Remove the front wheel. (See page **11**-8.
Remove the front fender.

Loosen the bolts on the fork top and bottom bridges.

NOTE

Slightly loosening the fork bolt while it is installed in the stem makes disassembly easier.

Pull down while turning the fork tube



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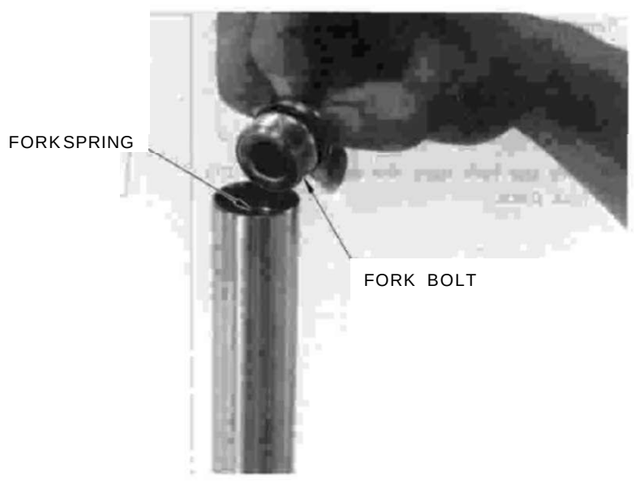
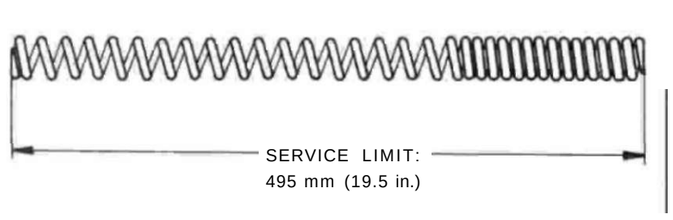
• FRONT FORK DISASSEMBLY

Remove the fork bolt.
Remove the fork spring.



» FRONT FORK SPRING FREE LENGTH

Inspect the fork spring free length.



Drain the ATF from fork by pumping it up and down.

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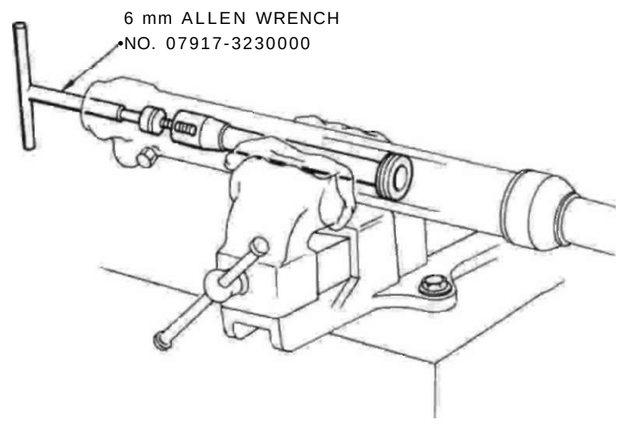
Remove the socket bolt with the Allen wrench.

NOTE

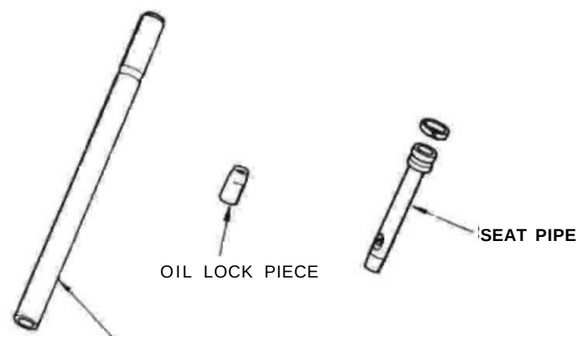
Remove the socket bolt to facilitate fork removal.

Remove the fork tube, the seat p/pe and the oil lock piece.

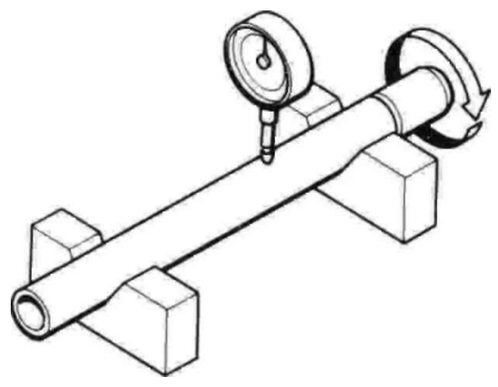


- FORK TUBE AND PISTON INSPECTION

Check the fork tube and the piston for wear



Set the fork tube in V-blocks and check run-out with a dial indicator.
Divide total indicator reading by 2 to determine actual runout.



SERVICE LIMIT: 0.2 mm (0.0079 in.)

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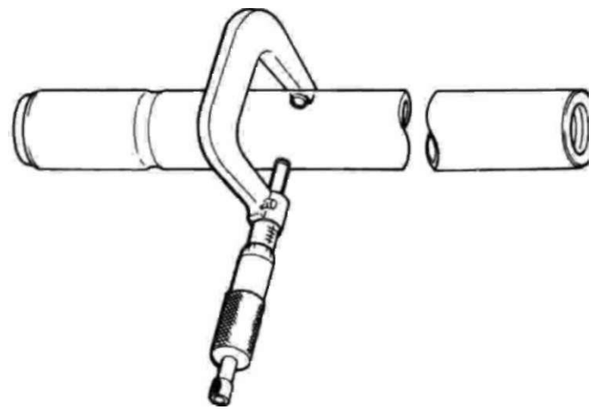
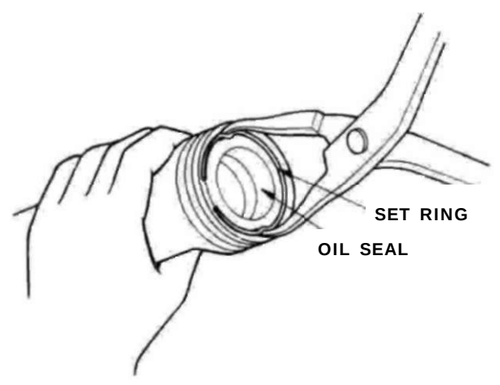
Measure at several points along the sliding surface (260 mm from bottom to top)

O.D. SERVICE LIMIT: **30.87** mm **(1.2154 in.**



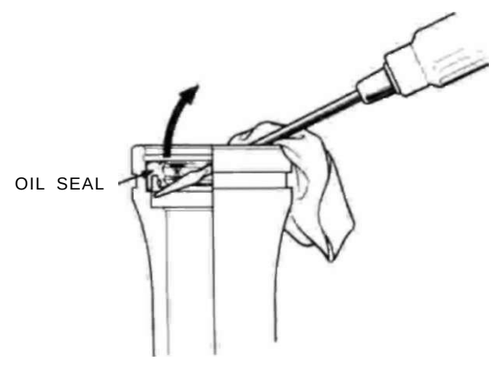
Remove the dust seal and pry off the set ring with the snap ring pliers.



Remove the oil seal.

NOTE

Use care when removing the oil seal not to damage the fork slider with a screw-driver.



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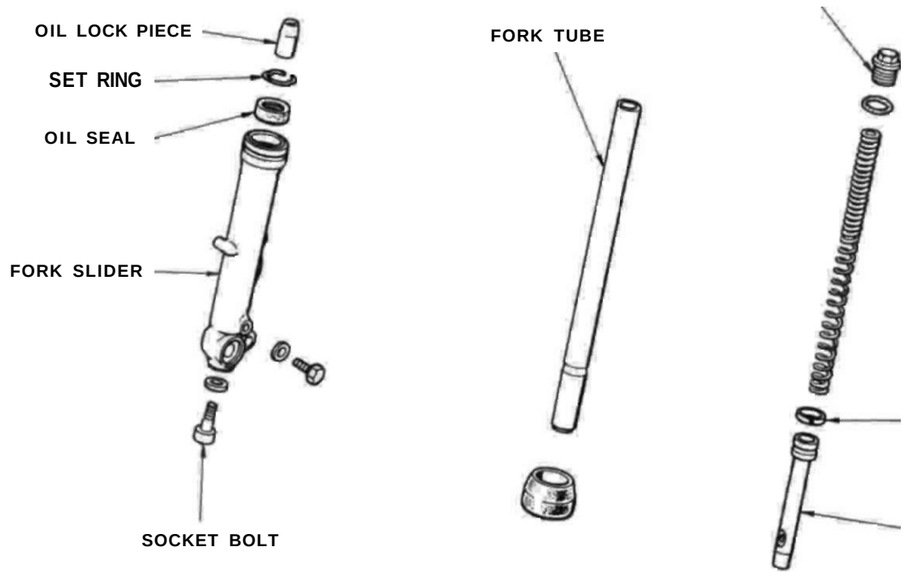
• BOTTOM CASE INSPECTION

Inspect the inside surface of the fork slider for wear or damage.
Measure the slider I.D.

I.D. SERVICE LIMIT:
31.165 mm (1.2270 in.)

• FRONT FORK ASSEMBLY

Before assembly, wash the parts in solvent and wipe them off completely.



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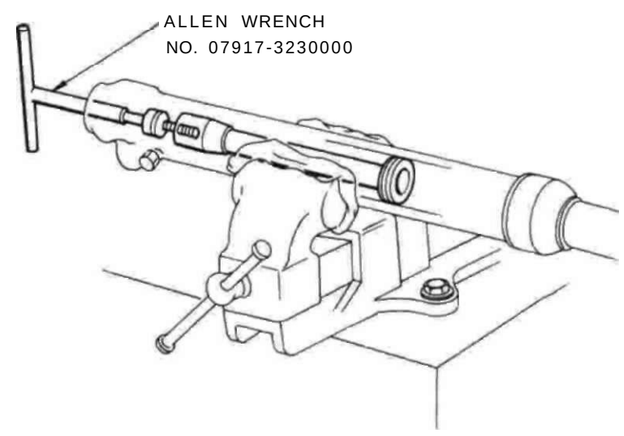
Insert the seat pipe into the fork tube and set the oil lock piece on the end of seat pipe. Insert the parts into the fork slider and tighten the socket bolt with the 6 mm Allen wrench.

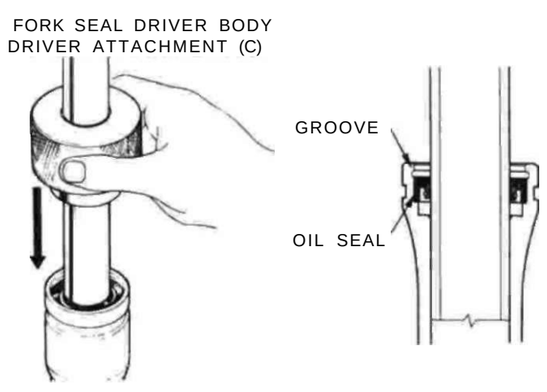
TORQUE: 1.8-2.3 kg-m (13.0-16.7 ft-lbs.)

NOTE
Apply locking agent to the socket bolt.



Install the oil seal in the top of the slider.

NOTE
Apply ATF to the oil seal and install it with the fork seal driver.
Fork seal is seated when the groove in the slider is visible at the top of the seal.



Install the snap ring into the groove of the fork slider with snap ring pliers.
Fill the forks with good quality ATF.

CAPACITY: 125 cc (4.2 oz.) at assembly

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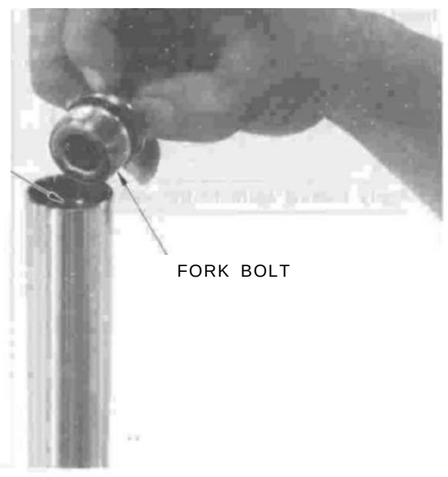
Install the fork spring and the O-ring.
Tighten the fork bolt.

TORQUE: 2.5-3.0 kg-m (18.1-21.7 ft-lb.)

FORK SPRING.

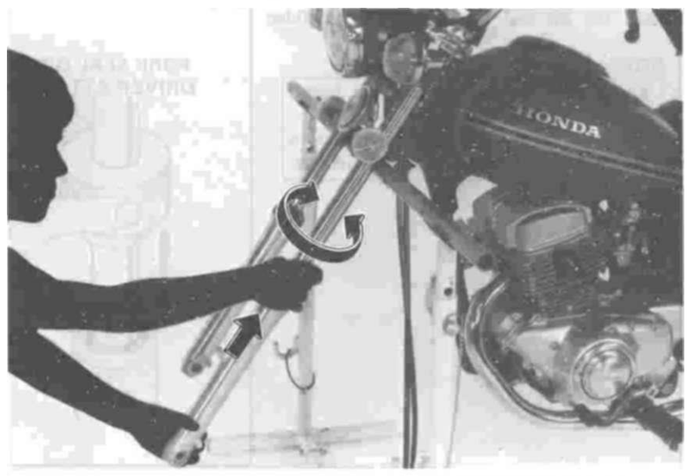


• FRONT FORK INSTALLATION

Install the front fork into the top bridge.

NOTE

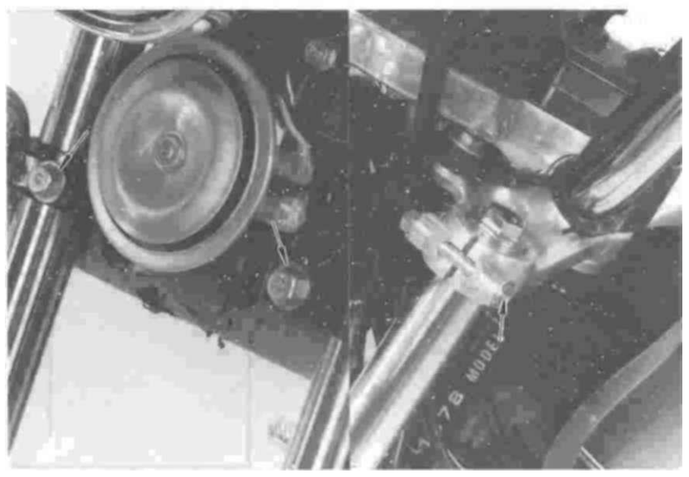
Align front fork top end with top surface of fork bridge.



Tighten the top bridge and bottom bridge bolts.

TORQUE: 2.0-2.5 kg-m (14.5-18.1 ft-lb.)

Install the front fender and the front wheel.



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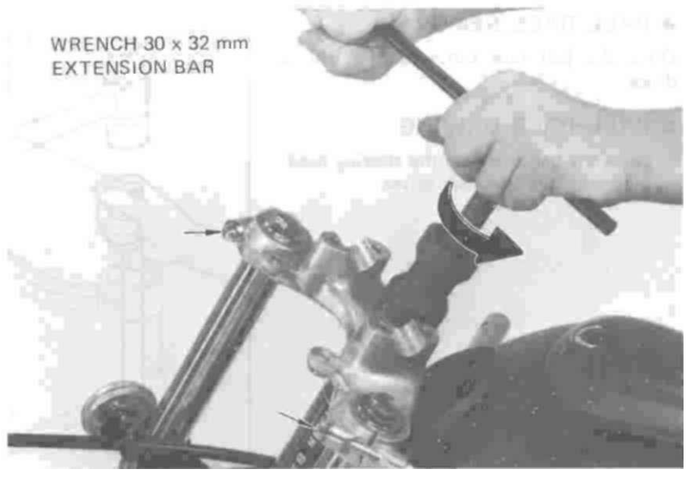
STEERING STEM

• TOP BRIDGE REMOVAL

Remove the steering handlebar. (See page 11-6.)

Remove the headlight and headlight case.
Remove the headlight bracket.

Remove the stem nut.
Loosen the fork top bridge bolts and remove the top bridge.



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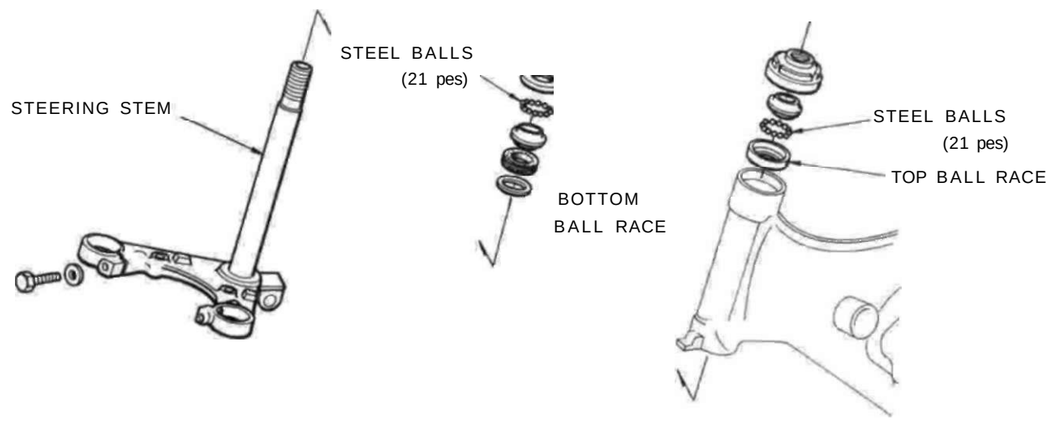
• STEERING STEM REMOVAL

Remove the front fork.
Remove the head top thread.

NOTE

Support the stem to prevent it from falling and remove the upper cone race and ball bearings.

Remove the steering stem

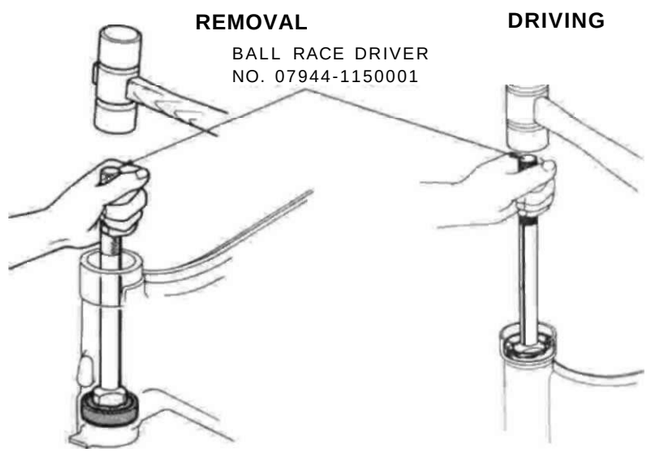


• BALL RACE REMOVAL

Drive the ball race out with the ball race driver.

• BALL RACE DRIVING

Drive the ball race into the steering head pipe with the ball race driver.



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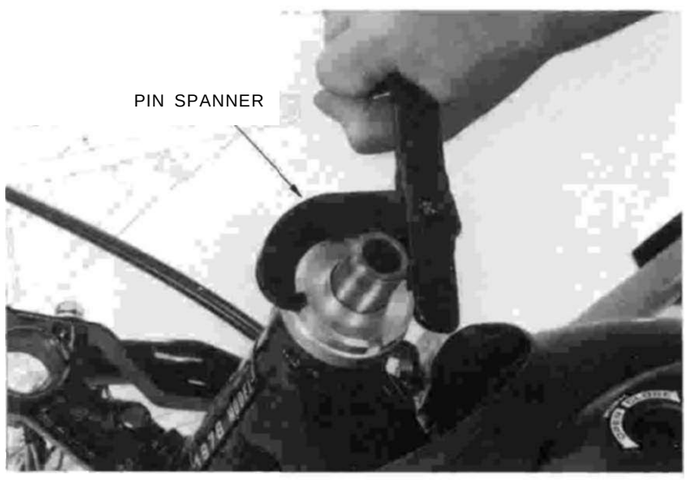
• STEERING STEM ASSEMBLY

Install the steel balls, the cone races, the dust seal and the steering stem.

NOTE

Grease the steel balls and the ball race. Tighten the top thread nut until sunk against the top ball race and back off about 1/8 turn.
Check that the stem rotates freely without play.



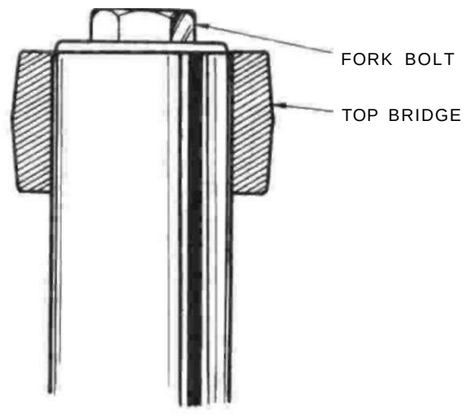
Install the top bridge and the front fork.

NOTE

Align the fork top end with the top face of the fork top bridge, as shown.

Tighten the lower bridge bolts.

TORQUE: 2.0-2.5 kg-m (14.5-18.1 ft-lb.)



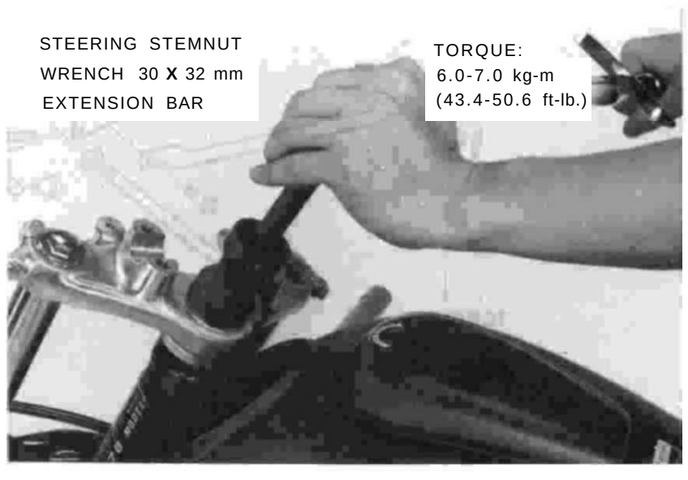
Tighten the stem nut.

TORQUE: 6.0-7.0 kg-m **(43.4-50.6 ft-lb.)**

Tighten the top bridge bolts.

TORQUE: 2.0-2.5 kg-m **(14.5-18.1 ft-lb.)**

Install the headlight bracket, headlight and steering handlebar.
Install the front wheel.



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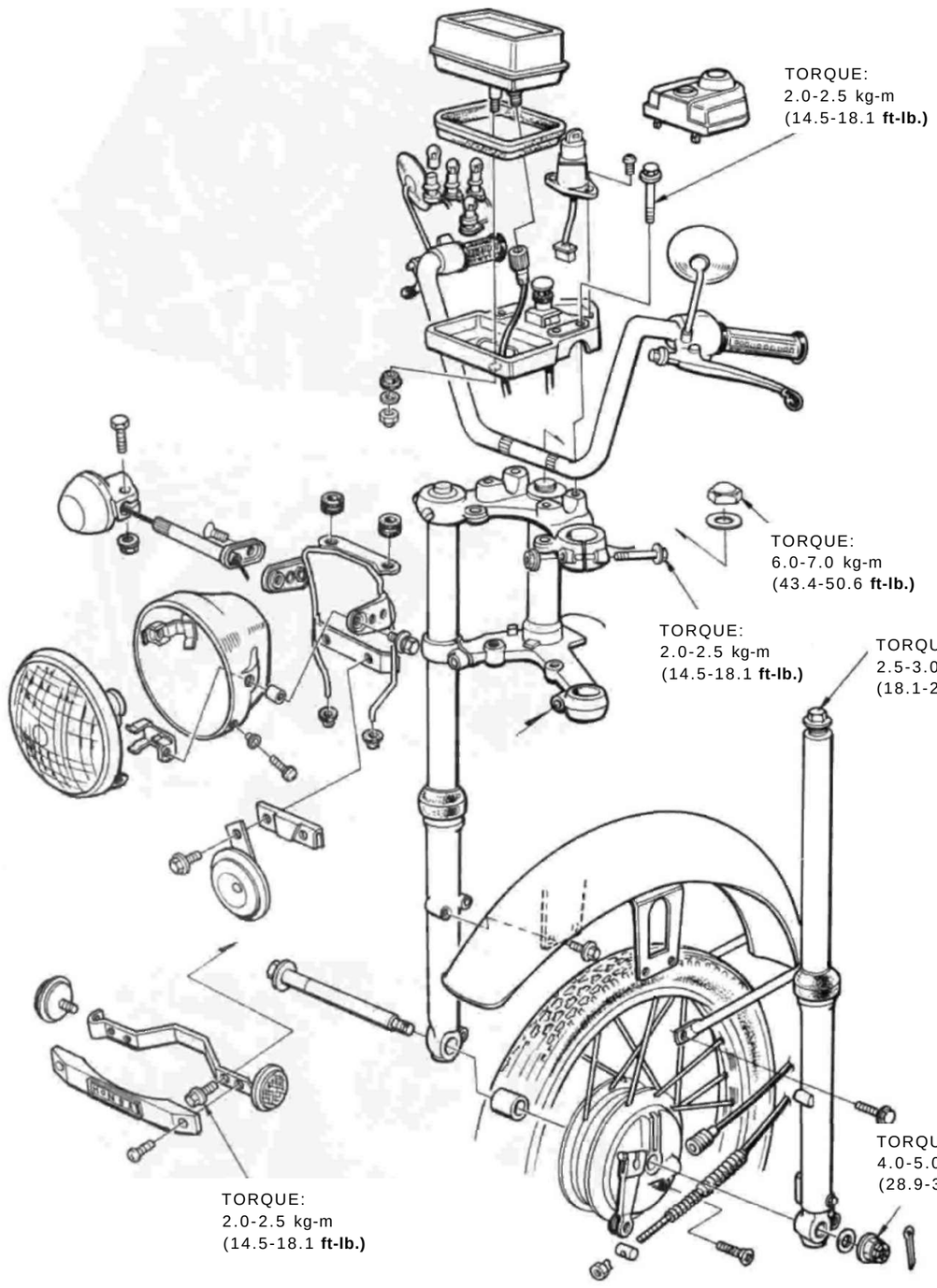

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SERVICE INFORMATION	12-1
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REAR WHEEL	12-3
REAR BRAKE PANEL	12-8
REAR SHOCK ABSORBER	12-10
SWINGARM	12-12
REAR BRAKE PEDAL	12-13

SERVICE INFORMATION

• WORKING PRACTICE

This section describes removal, installation and repair of the rear shock absrobers, the swingarm and the rear brake. This vehicle does not have a center stand. Support the engine with a block or the frame body with a rigid rack securely, when removing the rear wheel.

• TOOLS

Special Tools

Rear shock absorber compressor	Tool No. 07959-3290001
Spring holder attachment	Tool No. 07967-1150100

Common Tools

Bearing driver (42x47)	Tool No. 07746-0010300
Driver handle A	Tool No. 07749-0010000
Pilot (15)	Tool No. 07746-0040300

• TORQUES

Axle nut:	4.0-5.0 kg-m (28.9-36.2 ft-lb.
Swingarm pivot bolt:	5.0-6.0 kg-m (36.2-43.4 ft-lb.
Rear brake torque link nut:	2.0-2.5 kg-m (14.5-18.1 ft-lb.
Shock absorber nut:	3.0-4.0 kg-m (21.7-28.9 ft-lb.
Driven sprocket nut;	5.5-6.5 kg-m (39.8-47.0 ft-lb.
Brake cam bolt:	0.8-1.2 kg-m (5.8-8.6 ft-lb.)

• SERVICE DATA

ITEMS		STANDARD	SERVICE LIMIT
Axle bend		----------	0.2 mm (0.0079 in.)
Wheel rim runout	Radial	----------	2.0 mm (0.0787 in.)
	Axial	----------	2.0 mm (0.0787 in.)
Brake drum I.D.		130.0 mm (5.1181 in.)	131.0 mm (5.1575 in.)
Brake lining thickness		4.0 mm (0.1575 in.)	2.0 mm (0.0787 in.)
Rear shock absorber spring free length		184.1 mm (7.2480 in.)	175.6 mm (6.9133 in.)
Swingarm pivot bushing clearance		0.2-0.3 mm (0.0079-0.0118 in.)	0.5 mm (0.0197 in.)

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TROUBLESHOOTING

Rattle In Rear Wheel
1. Bent rear wheel
2. Worn rear wheel bearing
3. Loose spokes
4. Faulty tire
5. Loose axle nut
6. Loose rear fork bolt
7. Swingarm bushing worn

Soft Rear Suspension
1. Broken rear spring(s)
2. Faulty rear shock(s)

Hard Rear Suspension
1- Faulty rear shock (s)

Suspension Noise
1. Incorrect torque an axle
2. Faulty rear shocks or springs
3. Broken spring(s)
4. Bent rear fork

Faulty Brake
1. Incorrect adjustment of pedal
2. Brake lining worn
3. Brake lining surface dirty
4. Brake cam worn
5. Incorrectly fitted brake arm serrations
6. Faulty brake wear indicator

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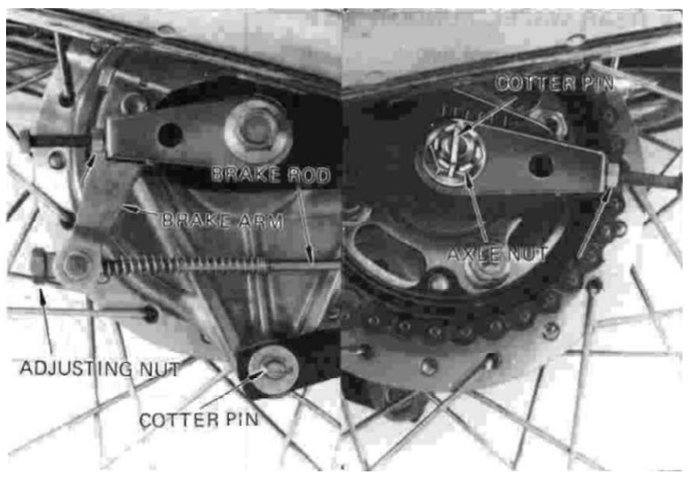
REAR WHEEL

REAR WHEEL REMOVAL

WARNING

Support the frame body with a safety stand.

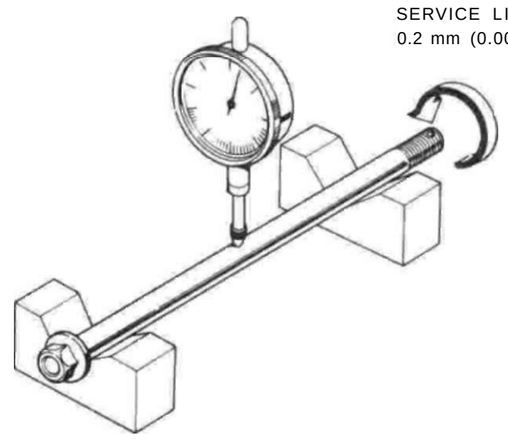
Remove the rear brake adjusting nut and the brake rod from the brake arm.
Remove the cotter pin and nut and remove the brake stopper arm.
Remove the cotter pin from the axle nut.
Remove the drive chain.
Remove the axle nut and pull the axle shaft out.
Remove the rear wheel.



- REAR AXLE RUNOUT

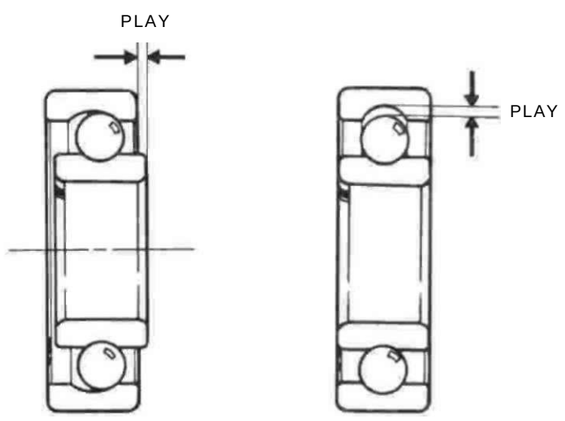
Set the axle in V blocks and measure the run-out by rotating the axle.
Divide total indicator reading by **2** to determine actual runout.

SERVICE LIMIT:
0.2 mm (0.0079 **in.**)



- REAR WHEEL BEARING INSPECTION

Turn the rear wheel by hand to check for condition. Replace the bearing if it is noisy or has excessive play



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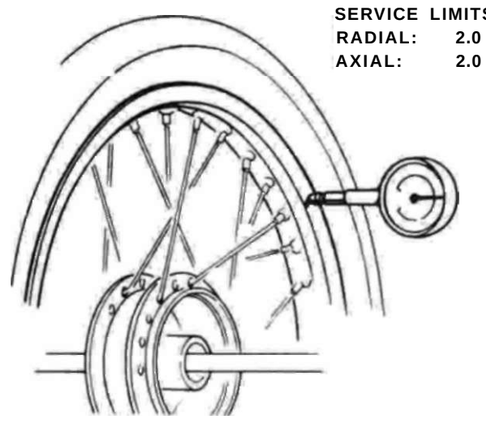
• REAR WHEEL RUNOUT

Measure the rear wheel runout.

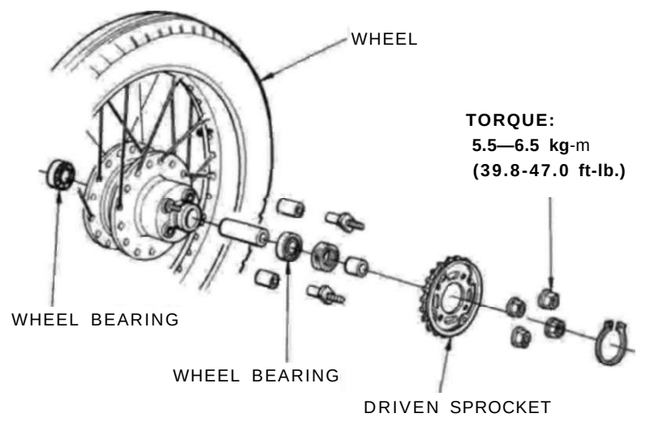


SERVICE LIMITS:
RADIAL: **2.0** mm **(0.0787** in.
AXIAL: **2.0** mm **(0.0787** in.

• REAR WHEEL DISASSEMBLY

NOTE

If the bearings are removed they should be replaced with new ones.



TORQUE:
5.5—6.5 kg-m
(39.8-47.0 ft-lb.)

• REAR WHEEL BEARING INSTALLATION

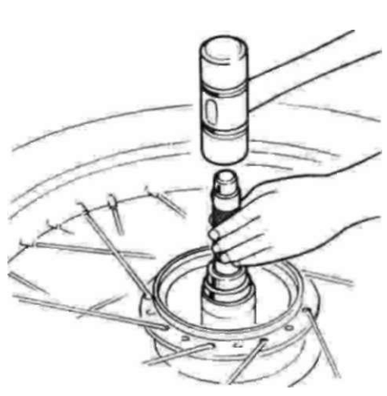
Apply grease to the bearing.
Install the right bearing first.

WARNING

Be careful to keep grease off the brake drum.

NOTE

- Drive the bearing squarely, not allowing .it to tilt.
- Install the bearing with the sealed end facing the outside.



DRIVER HANDLE A
BEARING DRIVER
(42x47)
DRIVER PILOT
(15)

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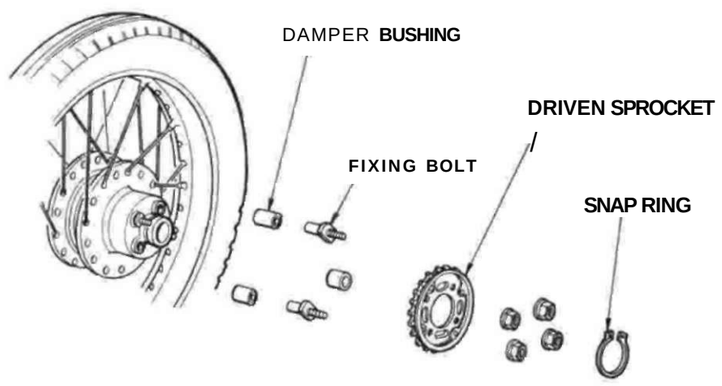
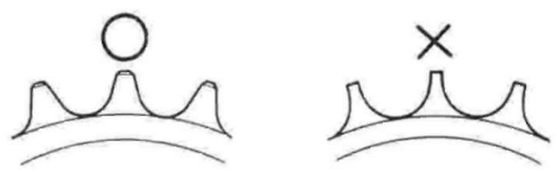
• REAR SPROCKET DISASSEMBLY



• FINAL DRIVEN SPROCKET WEAR

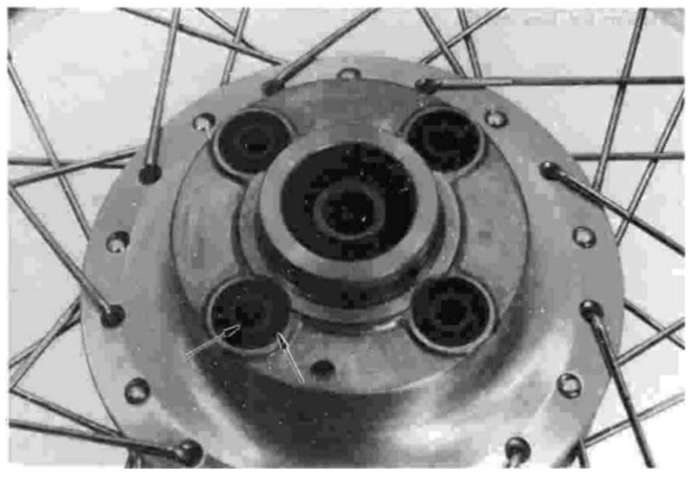
Inspect the drive chain and the sprocket before installing.

Replace the drive chain and sprocket if they show excessive wear or damage.



• DAMPER BUSHING INSPECTION

Inspect the damper bushing for wear or damage.



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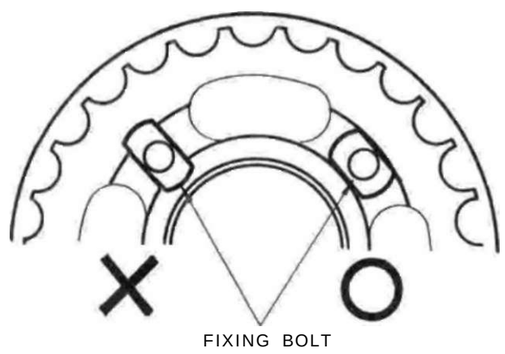
• REAR SPROCKET ASSEMBLY

Install the fixing bolts.

NOTE

Be sure the fixing bolts are seated in the sprocket groove properly.

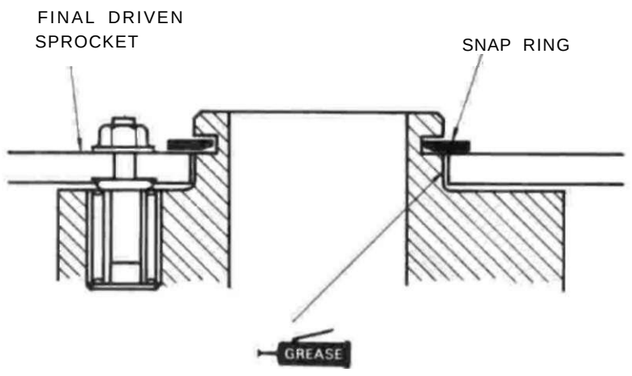


FIXING BOLT

Grease the left side of rear wheel hub and inside of the driven sprocket.
Install the sprocket and snap ring.

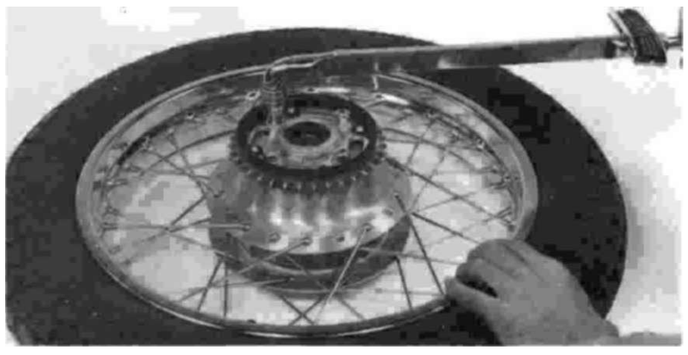
NOTE

Install with the cutout of the snap ring facing the sprocket.



Tighten the four nuts.

TORQUE: 5.5-6.5 kg-m
(39.8-47.0 ft-lb.)



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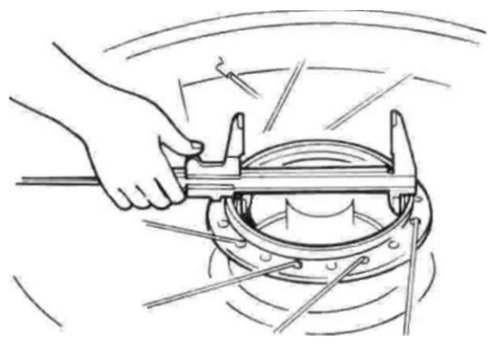
• BRAKE DRUM I.D.

Measure I.D. of the brake drum.

I.D. SERVICE LIMIT:
131.0 mm (5.1575 in.)



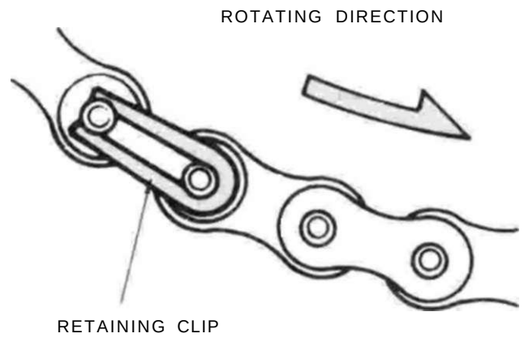
• REAR WHEEL INSTALLATION

Install the rear wheel and the axle shaft.
Install the drive chain on the drive and driven sprockets.

Install the master link and retaining clip.

NOTE
Note the direction of the retaining clip.

Install the brake rod and brake stopper arm.
Adjust the drive chain. (See page 3-10.)



NOTE
Align the index marks of the adjusters with the same side scales on the swing-arm.

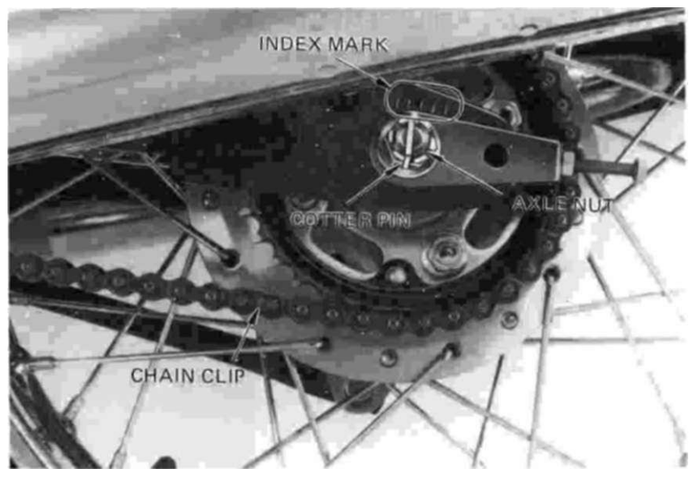
Tighten the axle nut.

TORQUE: 4.0-5.0 kg-m (28.9-36.2 ft-lb.)

Install a new cotter pin into the axle nut and stopper arm nut and spread the ends.

NOTE
Lubricate drive chain if necessary.

Adjust the rear brake. (See page 3-13.)



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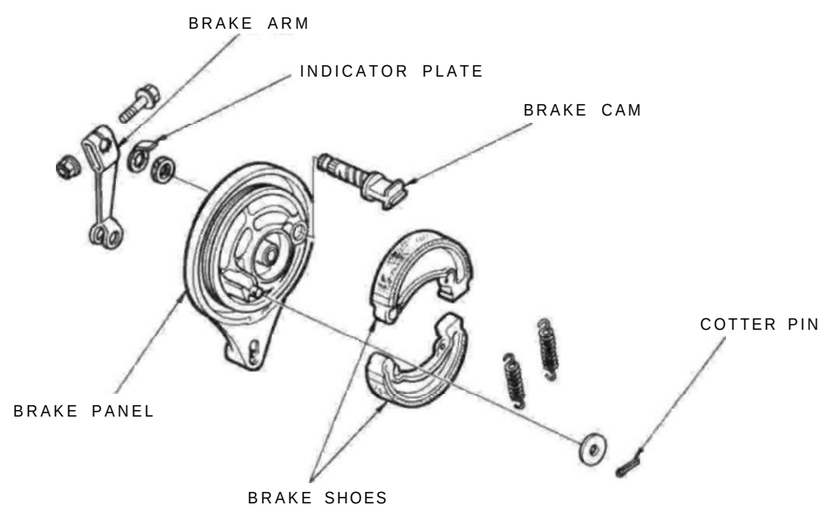
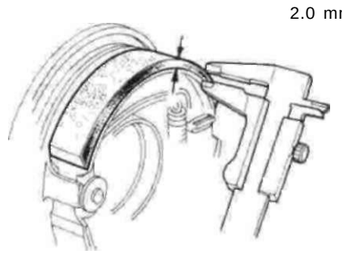
REAR BRAKE PANEL



- REAR BRAKE LINING THICKNESS

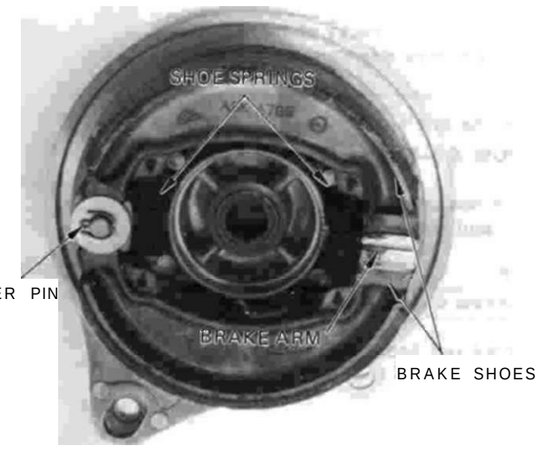
Measure the rear brake lining thickness.

SERVICE LIMIT:
2.0 mm (0.0787 in.)



- BRAKE SHOES REPLACEMENT

Pry off the cotter pin and remove the washer.
Remove the brake shoe springs.
Replace the brake shoes.



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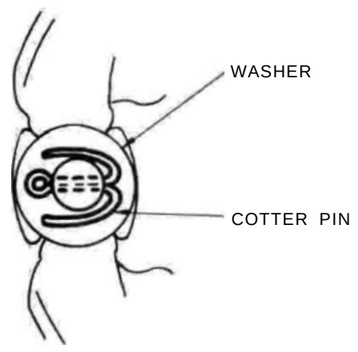
Apply grease on the sliding face of the brake cam and install it.
Install the brake shoe return springs on to the brake shoes.

Install the washer and cotter pin.

NOTE
Install and spread the ends of the cotter pin as shown.

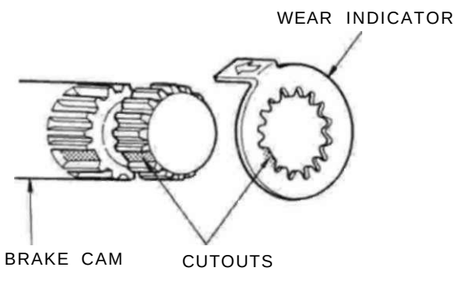


WARNING

Do not get grease on the brake linings.

Install the indicator plate onto the brake cam.

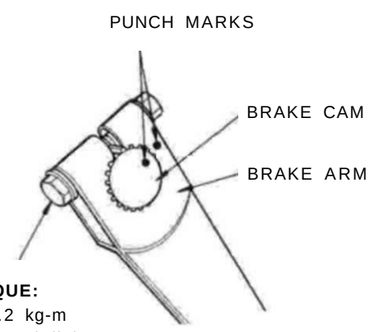
NOTE
Align the cutouts of brake cam and indicator plate.



Install the brake arm on the brake cam.

NOTE
Align the punches marks of brake cam and the arm.

Tighten the brake cam bolt and nut.



TORQUE:
0.8-1.2 kg-m
(5.8-8.6 ft-lb.)

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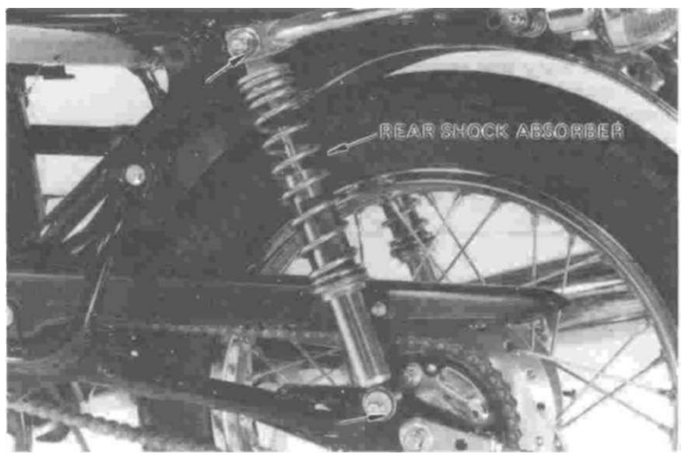
REAR SHOCK ABSORBER



- **REAR SHOCK ABSORBER REMOVAL**

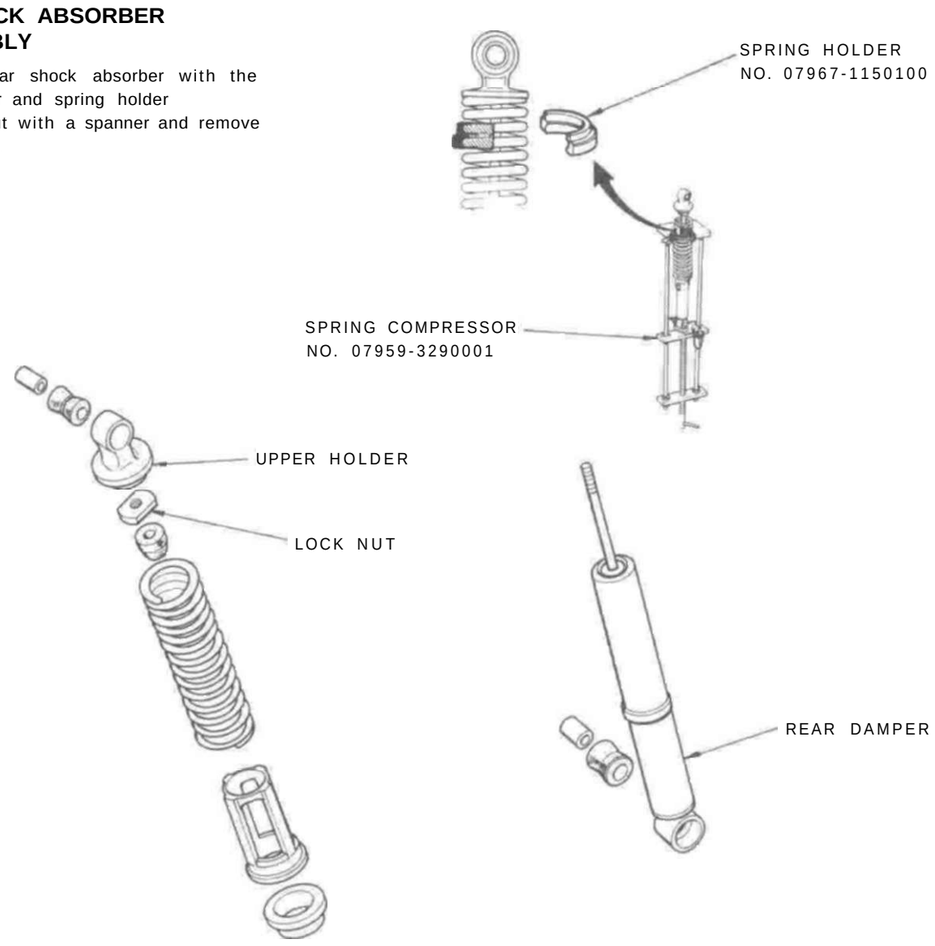
NOTE

Place the frame body on a rigid rack.

Remove the rear shock absorber by unscrewing the upper and lower bolts.

- **REAR SHOCK ABSORBER DISASSEMBLY**

Compress the rear shock absorber with the spring compressor and spring holder
Hold the lock nut with a spanner and remove the upper holder.



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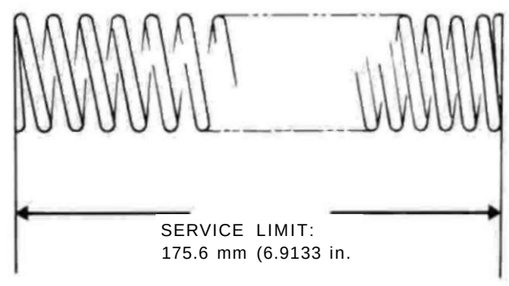
• SHOCK ABSORBER SPRING FREE LENGTH

Measure the spring free length.

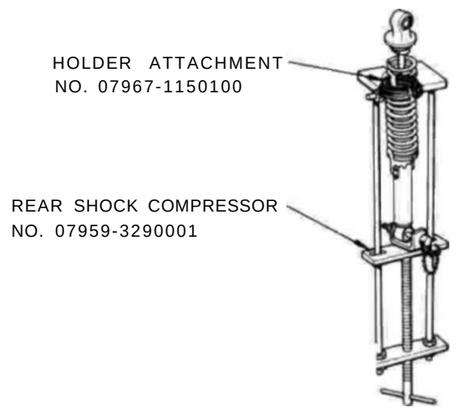


• SHOCK ABSORBER ASSEMBLY

The assembly sequence is essentially the reverse of disassembly.

NOTE

Apply locking agent to the lock nut at time of assembly.

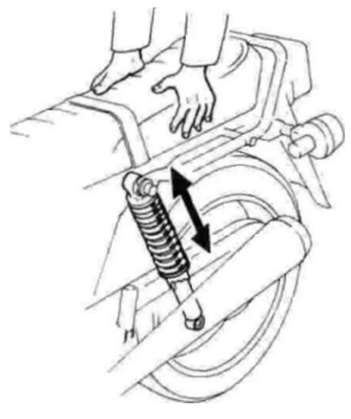


• SHOCK ABSORBER INSTALLATION

Install the rear shock absorbers with the upper and lower bolts.

TORQUE: 3.0-4.0 kg-m (21.7-28.9 ft-lb.)

Check the operation after installing the rear shock absorbers.



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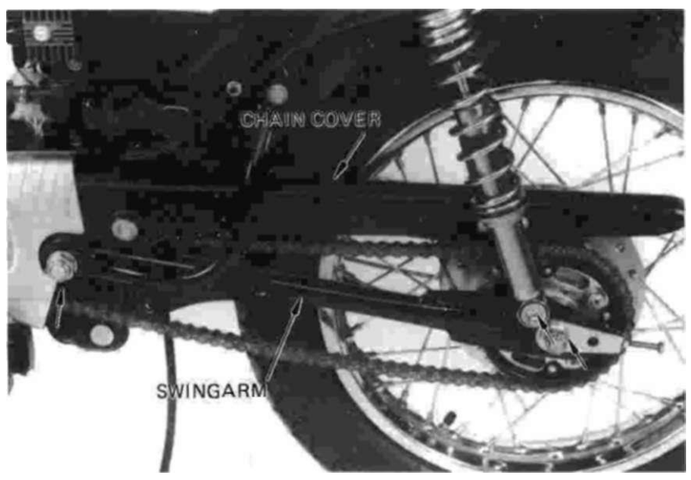
SWINGARM

• SWINGARM REMOVAL

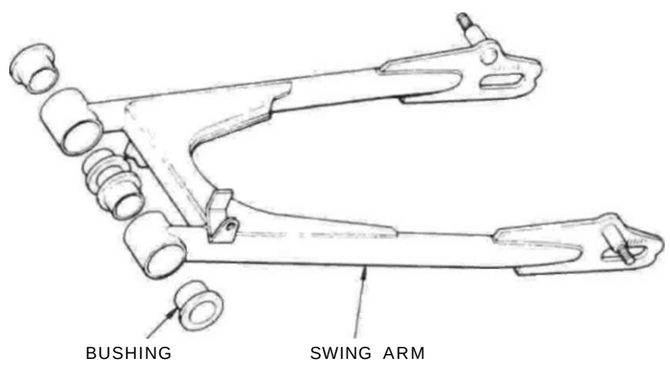
Remove the left and right mufflers.
Remove the rear wheel. (See page 12-3.)
Remove the rear shock absorbers. (See page 12-10.)
Remove the drive chain cover.
Remove the pivot bolt and pull the swingarm out.



> SWINGARM DISASSEMBLY/ASSEMBLY

NOTE

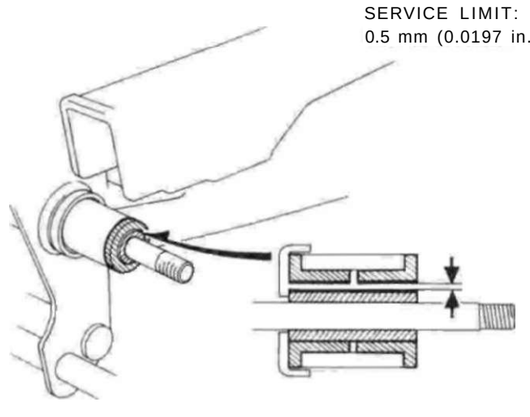
Drive the bushings into place with a soft mallet, or use a block to avoid damaging it.



• SWINGARM BUSHING INSPECTION

Measure the O.D. of collars and I.D. of bushing and inspect the pivot-to-bushing clearance.

SERVICE LIMIT:
0.5 mm (0.0197 in.



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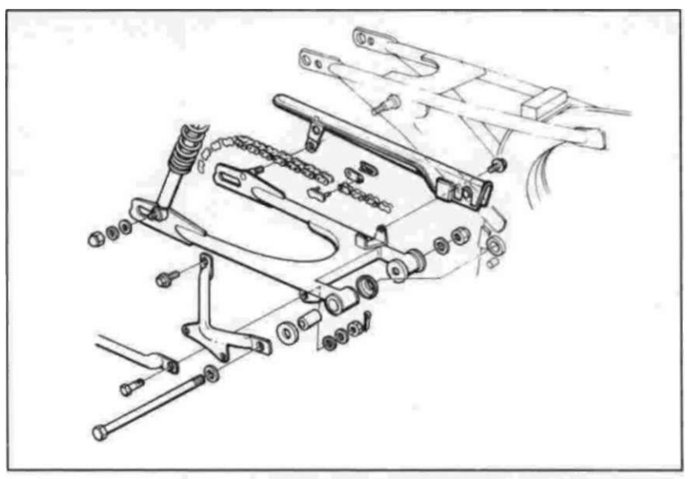
• SWINGARM INSTALLATION

Install the rear fork and tighten the pivot bolt.

TORQUE: 5.0-6.0 kg-m (36.2-43.4 ft-lb.)

Install the drive chain cover and the rear wheel. (See page 12-7.)
Install the shock absorbers.
Install the left and right mufflers.



REAR BRAKE PEDAL

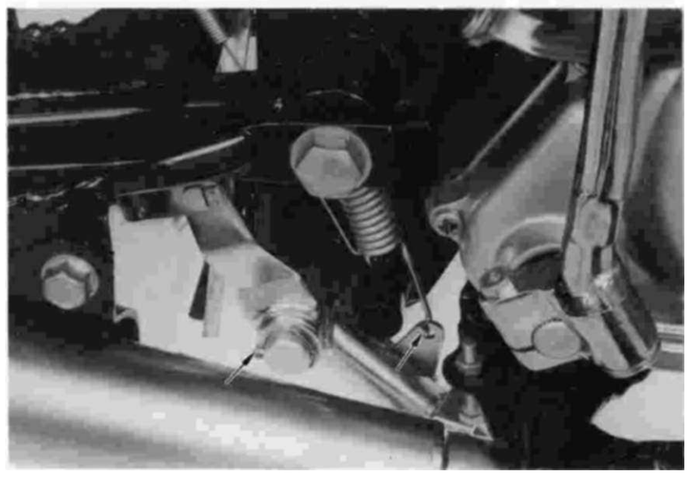
• BRAKE PEDAL REMOVAL

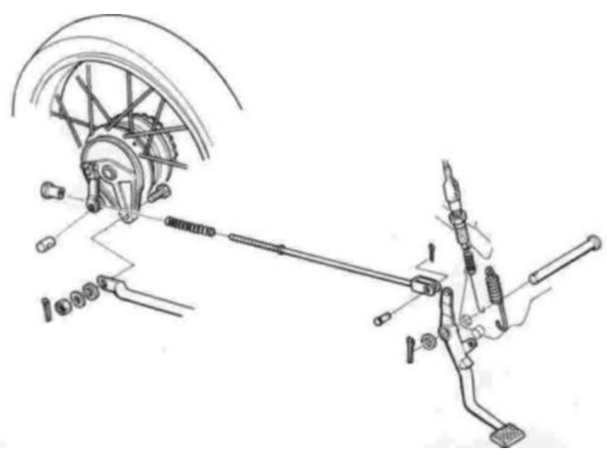
Disconnect the brake rod and remove the stoplight switch spring. Remove the cotter pin and washer, and remove the brake pedal.

NOTE

Note the location of the stoplight switch spring.

After installing the brake pedal, adjust the free play. (See page 3-13.)





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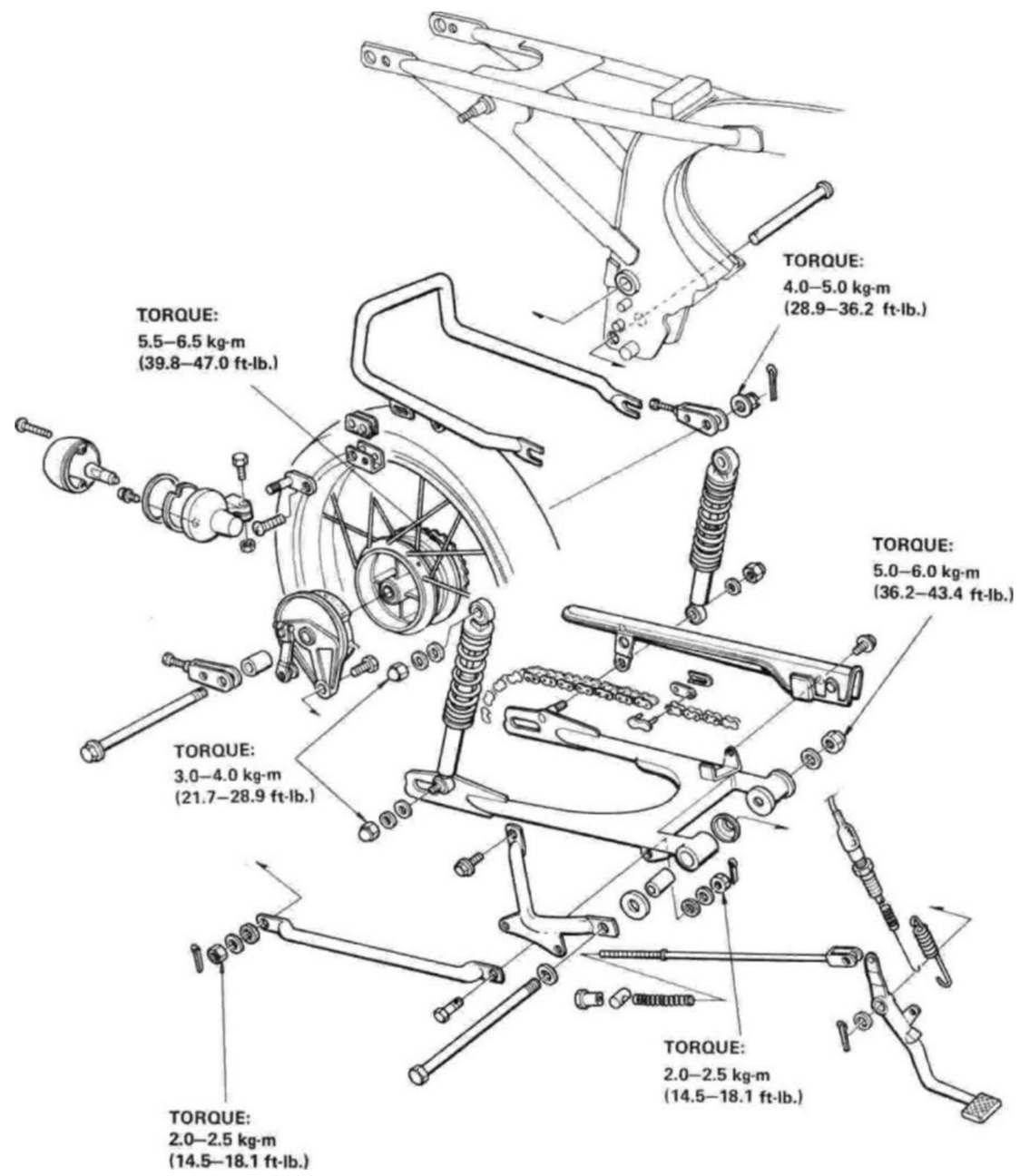

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13 FUELTANK/AIR CLEANER/ REAR FENDER CRANKCASE BREATHER

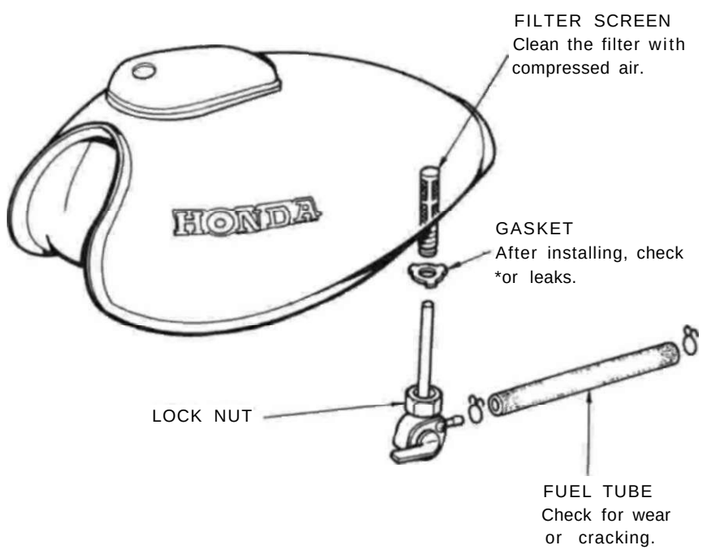
FUEL TANK

Gasoline is flammable.
Keep sparks and flame away during fuel valve assembly.

Remove the seat.
Turn the fuel valve "OFF" and disconnect the fuel tube.

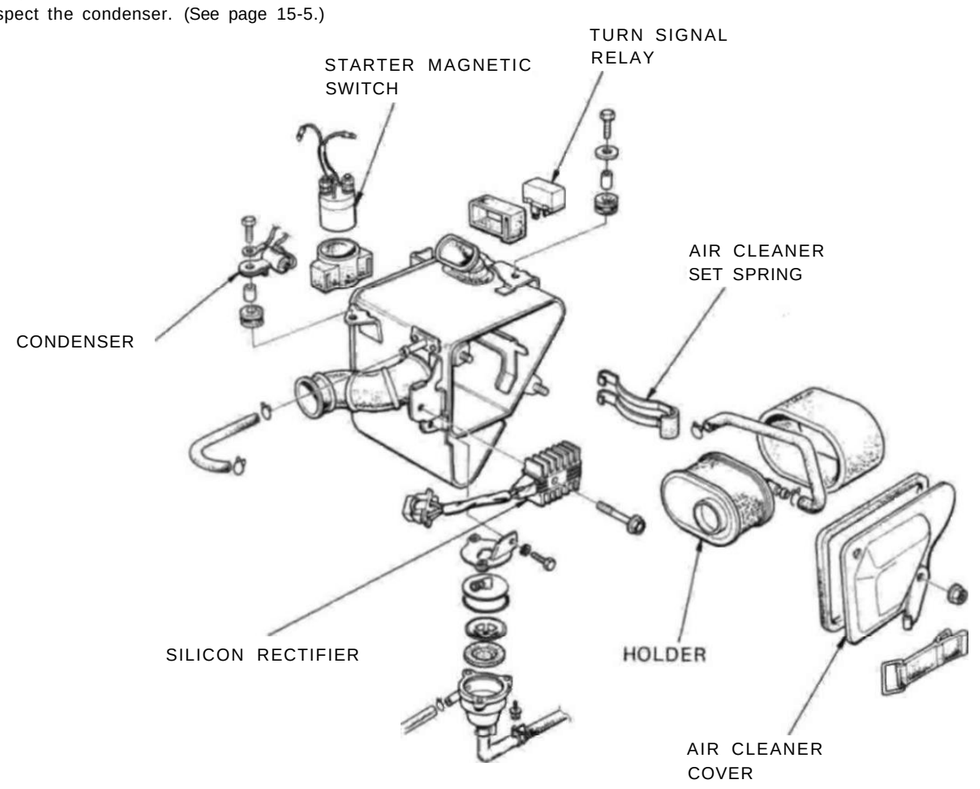
Remove the fuel tank.

NOTE
Do not overtighten the lock nut on the fuel valve.



AIR CLEANER

Remove the seat.
Cleaning the air cleaner element. (See page 3-2.)
Inspect the starter magnetic switch. (See page 16-6.)
Inspect the condenser. (See page 15-5.)



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REAR FENDER

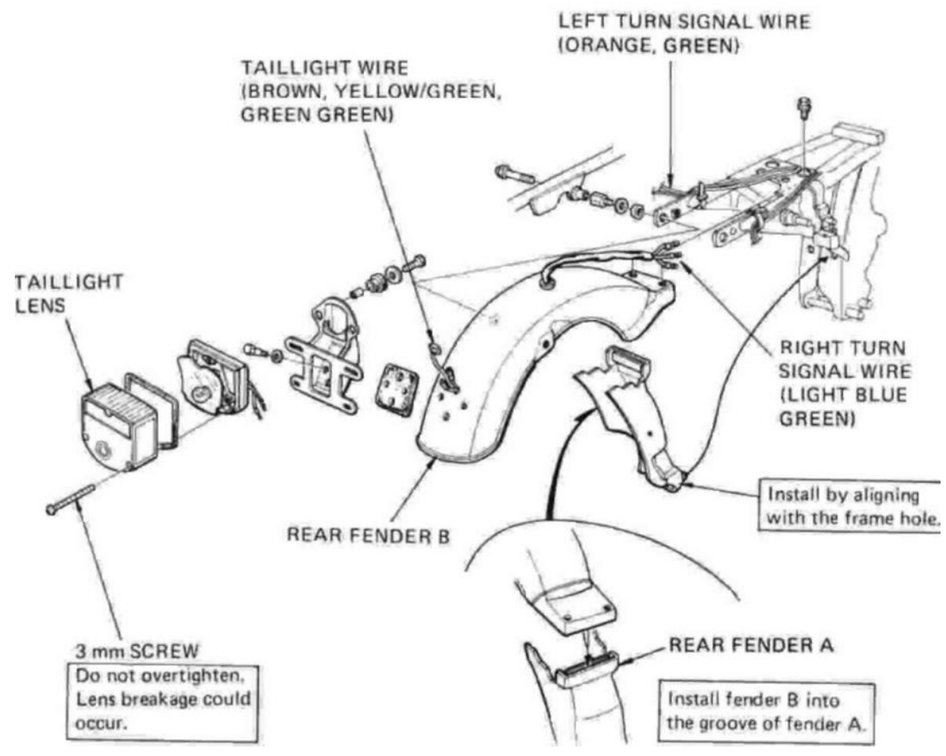
• REAR FENDER REMOVAL

Remove the seat
Remove the rear fender.
Separate the rear fender A and fender B.

• REAR FENDER INSTALLATION

NOTE

Install fender B into the groove of fender A.


LEFT TURN SIGNAL WIRE (ORANGE, GREEN)
TAILLIGHT WIRE (BROWN, YELLOW/GREEN, GREEN GREEN)
TAILLIGHT LENS
RIGHT TURN SIGNAL WIRE (LIGHT BLUE GREEN)
Install by aligning with the frame hole.
REAR FENDER B
REAR FENDER A
3 mm SCREW
Do not overtighten. Lens breakage could occur.
Install fender B into the groove of fender A.

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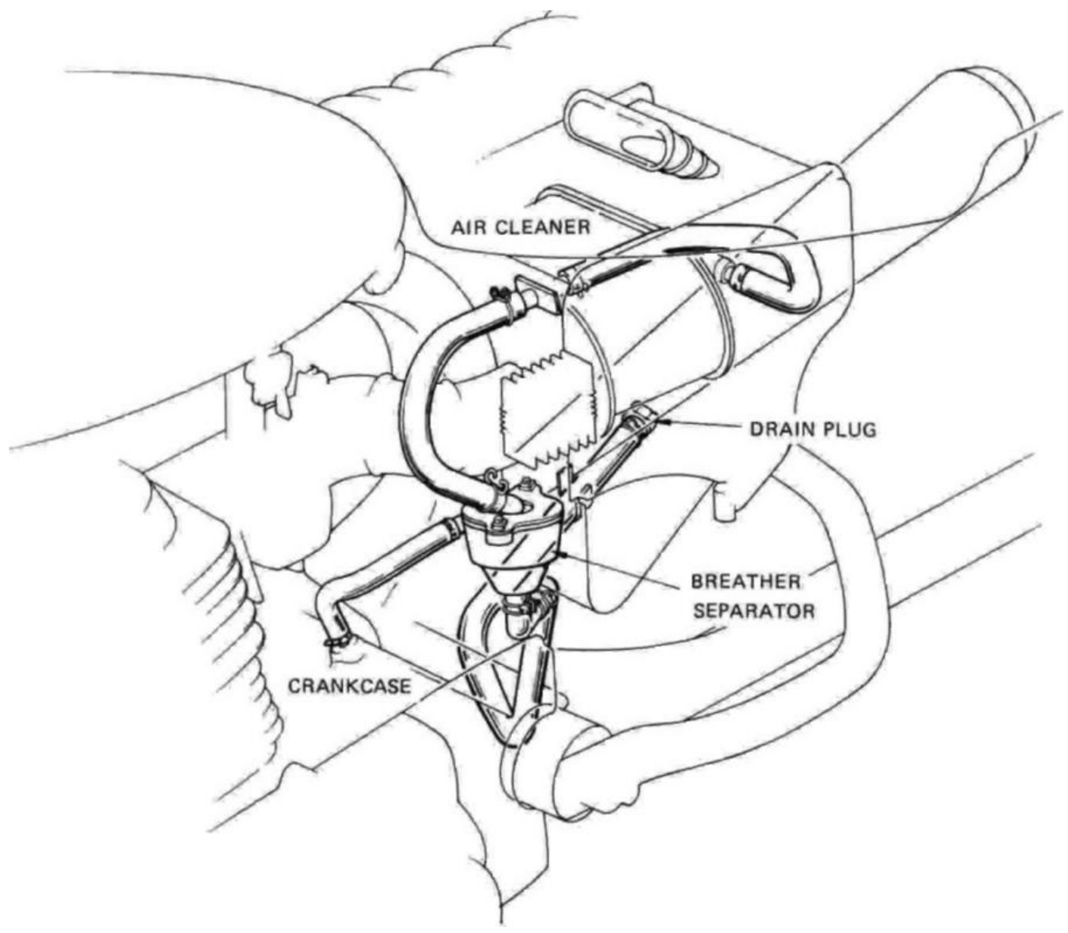
CRANKCASE BREATHER

Rout the breather tubes as shown.



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14. BATTERY/ CHARGING SYSTEM

SERVICE INFORMATION	**14-1**
TROUBLESHOOTING	**14-2**
BATTERY	**14-3**
CHARGING SYSTEM	**14-4**

SERVICE INFORMATION

• WORKING PRACTICE

This section describes the electric parts service. For A.C. generator removal, refers to section 9.
Battery acid level should be checked regularly and filled with distilled water when necessary.
When charging the battery, quick-charging should only be done in an emergency; slow-charging is preferred.
Remove the battery from the motorcycle for charging whenever possible. If battery must be charged on the motorcycle, disconnect the battery cables.
Keep fire or sparks away from a charging battery because it produces hydrogen.
All charging system components can be tested on the motorcycle.

• SPECIFICATIONS

Battery		
	Capacity:	6V - 12 ampere-hours
	Specific gravity (normal charge):	1.260-1.280 20°C (68°F)
	Charging rate:	1.2 ampere maximum
Generator:		A.C. Generator
	Charging:	0.08 kw/5,000 rpm Starts 2,200 rpm 5,000 rpm 3.3A 7.0V (at battery) 10,000 rpm 6.0A 8.3V (at battery)
Rectifier:		Silicon diode
Fuse:		20A

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TROUBLESHOOTING

No Power - Key Turned On
1. Dead battery
   a. Battery electrolyte evaporated
   b. Ignition switch left on
   c. Charging system failure
2. Disconnected battery cable
3. Main fuse burned out
4. Faulty ignition switch

Low Power — Key Turned On
1. Weak battery
   a. Low battery electrolyte level
   b. Ignition switch left on
   c. Charging system failure
2. Loose connection

Low Power — Engine Running
1. Weak battery
   a. Low battery electrolyte level
   b. One or more dead cells
2. Charging system failure

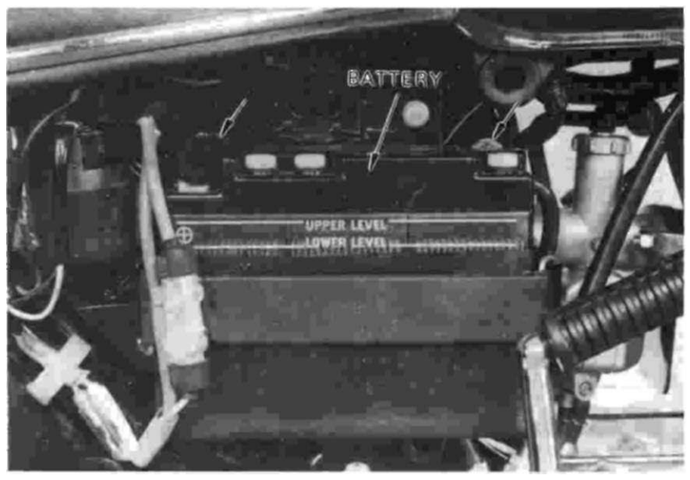
Intermittent Power
1. Loose battery connection
2. Loose charging system connection
3. Loose starting system connection
4. Loose connection or short circuit in ignition system
5. Loose connection or short circuit in lighting system

Charging System Failure
1. Loose, broken, or shorted wire or connection
2. Faulty voltage regulator
3. Faulty silicon rectifier
4. Faulty AC generator

BATTERY

• BATTERY REMOVAL

Disconnect the negative cable.
Remove the strap.
Disconnect the positive cable.
Remove the battery case with in battery.

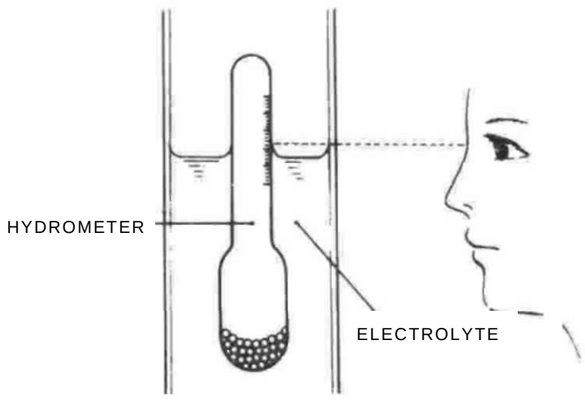


• TESTING SPECIFIC GRAVITY

The specific gravity of the battery must be checked with a hydrometer.

FULLY CHARGED: 1.260-1.280

Charging is required for specific gravities below **1.220. (20°C/68°F).**



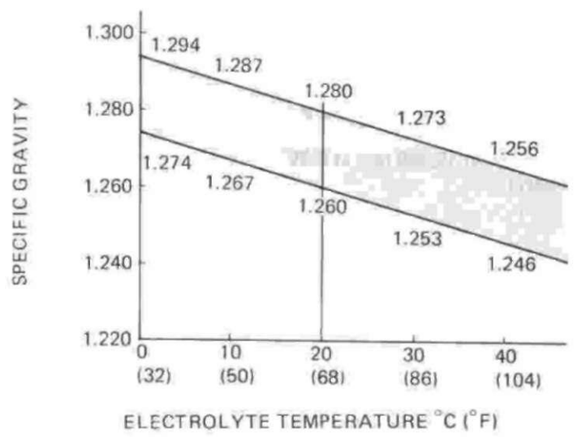
warning

Ttie battery contains sulfuric acid. A void contact with skin, eyes, or clothing. Antidote: EXTERNAL-Flush with water. INTERNAL-Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call physician immediately. Eyes: Flush with water and get prompt medical attention. Batteries produce explosive gases. Keep sparks, flame, cigarettes away. Ventilate when clwrging or using in enclosed space. Always shield eyes when working near batteries.

KEEP Ol/T OF REACH OF CHILDREN.

NOTE

Replace the battery if sulfation is evident on the cells, or if pastes have settled in the bottom.



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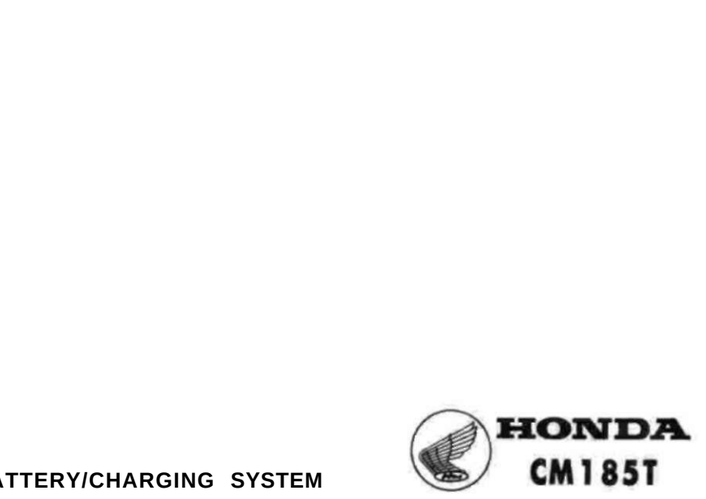
CHARGING

CONNEC-TION	CHARGER (+) TO BATTERY (+) CHARGER (-) TO BATTERY (-)
CHARGING CURRENT	1.2 AMPS
CHARGING	CHARGE UNTIL THE SPECIFIC GRAVITY REACHES 1.260 to 1.280 (20°C/68°F). NEAR THE CHARGING PERIOD, AIR BUBBLES MAY APPEAR ON THE INSIDE.

Keep sparks and open flames away when charging battery.
Avoid rapid charging. If rapid charging must be performed, use care to prevent a temperature rise above 45°C. (IJ3°F)

After installation, apply grease on the terminals.



CHARGING SYSTEM

• CHARGING TEST

Perform the test after warming up the engine.

NOTE

Gradually raise the rpm while watching the voltage. Do not raise the voltage rapidly.

BATTERY SPECIFIC GRAVITY:
1.260-1.280 (20°C/68°F)
CHARGING STARTING SPEED:
2,200 rpm
3.3 Amp Min. at 5,000 rpm at 7.0V (of battery)
6.0 Amp Max. at 10,000 rpm at 8.3V (of battery)

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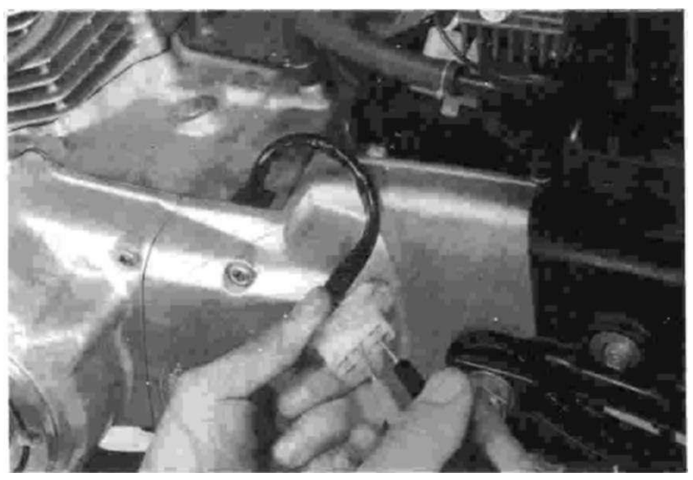
» STATOR COIL INSPECTION
CONTINUITY TEST

NOTE

It is not necessary to remove the stator to make this test.

Continuity test:
There should be continuity between the three lead wires: pink-white, white-yellow, and yellow-pink of the stator coil.

Insulation test:
There may be no continuity between white, yellow, or pink wire and ground.

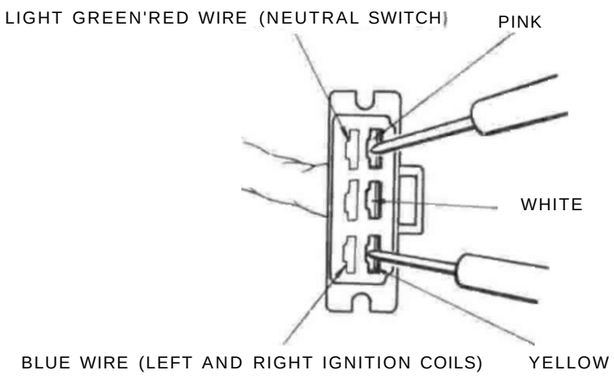


• RECTIFIER INSPECTION

Check continuity through the rectifier with a volt-ohmmeter or continuity tester.

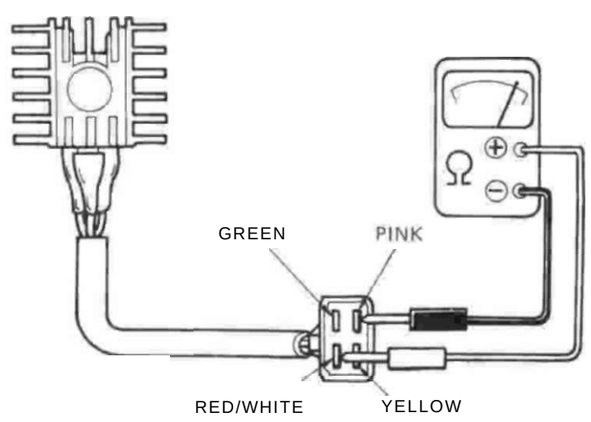
NOTE

Perform the rectifier inspection, noting the polarity of the tester. Do not test with a megger. (High voltage damages the diodes.)



Continuity should exist according to the following table. When (+) and (-) are exchanged, there should be no continuity.

TESTER POLARITY	-	+
WIRE COLOR	RED/WHITE	PINK
	RED/WHITE	YELLOW
	RED/WHITE	GREEN
	PINK	GREEN
	YELLOW	GREEN



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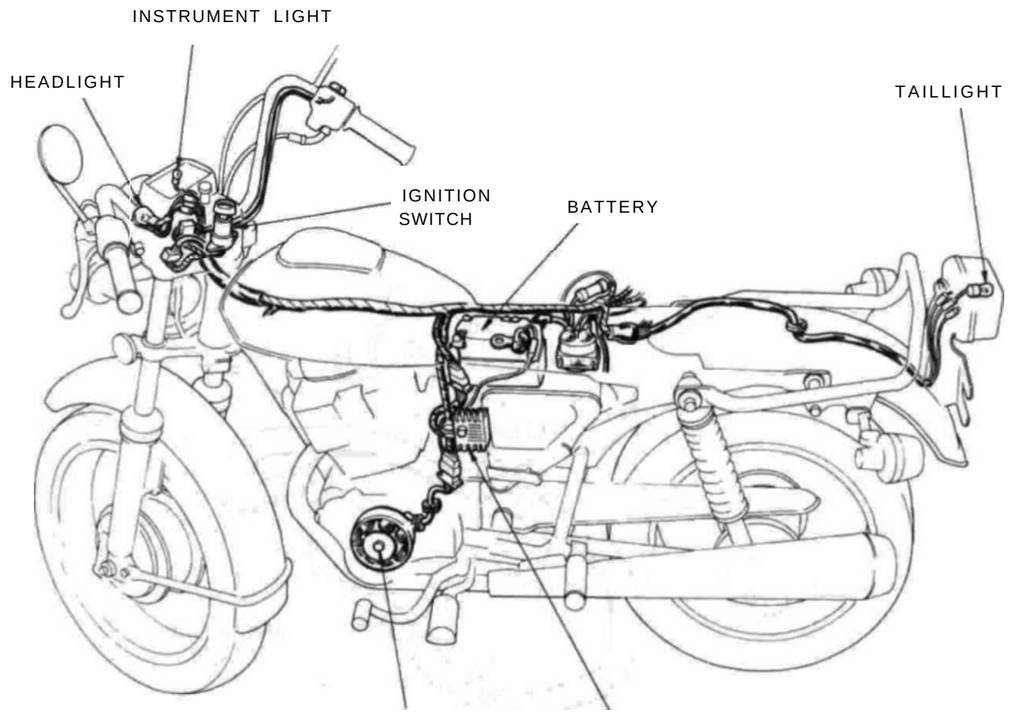
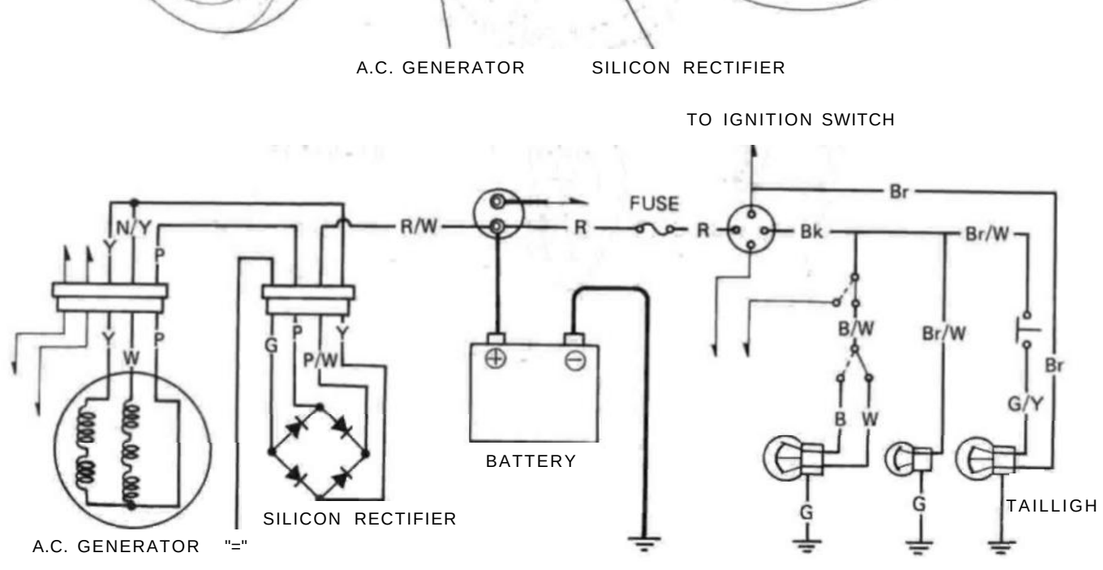
BATTERY/CHARGING SYSTEM





G- GREEN
Y- YELLOW
W- WHITE
P- PINK
R- RED
Br- BROWN
B- BLUE

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HONDA CM185T

15. IGNITION SYSTEM

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SERVICE INFORMATION

- **WORKING PRACTICE**

This section describes the parts of the ignition system.

Spark plug: Refer to section 3.
Contact breaker; Refer to section 9.

Be sure that the battery is fully charged before diagnosing troubles in the ignition system.

- **SPECIFICATIONS**

Spark plug type:

for cold climate below 5°C (41 °F)		standard		for extended high speed driving	
ND	NGK	ND	NGK	ND	NGK
U20FS	C6H	U22FS	C7HS	U24FB	C9H

Plug gap: 0.6-0.7 mm (0.024-0.028 in.)
Contact breaker points
point gap: 0.3-0.4 mm (0.012-0.016 in.)
Condenser capacity: 0.25 ± 10% uF
Ignition advance F mark (initial): 15° B.T.D.C.
Max. advance: 37-40° B.T.D.C.
From "F" to max. advance: 1,800 rpm-3,100 rpm

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TROUBLESHOOTING

Engine Cranks but Will Not Start
1. Engine stop switch OFF
2. No spark at plugs
3. Improper ignition timing
4. Plugs fouled
5. Plug wires crossed
6. Open ignition diode
7. Ignition malfunction

No Spark at Plugs
1. Engine stop switch OFF
2. Points not opening
3. Points burned, wet, fouled or dirty
   a. Loose or broken wire
   b. Low battery, low charging voltage
   c. Faulty ignition switch
   d. Faulty starter button
   e. Faulty engine stop switch
   f. Faulty ignition coil
5. Faulty high tension cords
6. Coils weak or inoperative
7. Faulty condenser
8. Faulty spark plug
9. Ignition timing incorrect

Ignition Timing Incorrect
1. Inconect breaker point gap
2. Faulty spark advancer

Engine Starts but Runs Poorly
1. Ignition primary circuit
   a. Points dirty or fouled
   b. Incorrect point gap
   c. Weak or defective coil
   d. Faulty capacitor
   e. Loose or bare wire
   f. Intermittent short-circuit in a switch
2. Ignition secondary circuit
   a. Plugs fouled or worn
   b. Faulty or crossed plug wires
3. Ignition timing
   a. Improper ignition timing
   b. Faulty advancer mechanism
4. Low battery, low charging voltage

Engine Kicks Back When Starting or Backfires When Running
1. Improper ignition timing

Misfiring during Acceleration
1. Worn spark plug, breaker points and/or ignition wires
2. Incorrect ignition timing

Backfiring
1. Ignition timing incorrect
2. Ignition malfunction

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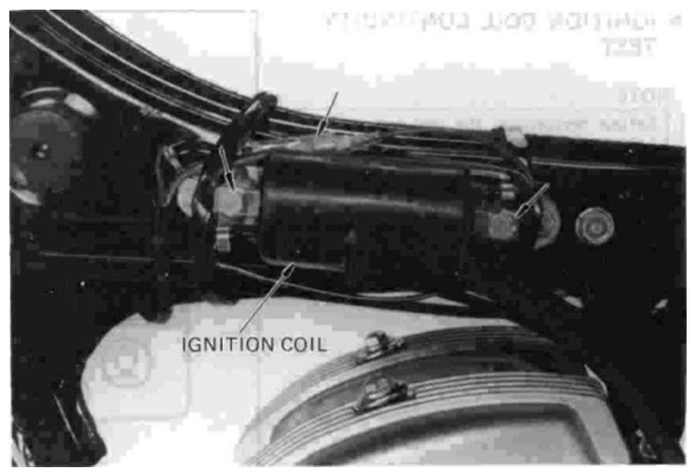
IGNITION COIL

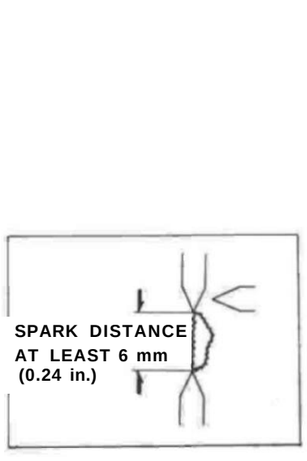
• IGNITION COIL REMOVAL

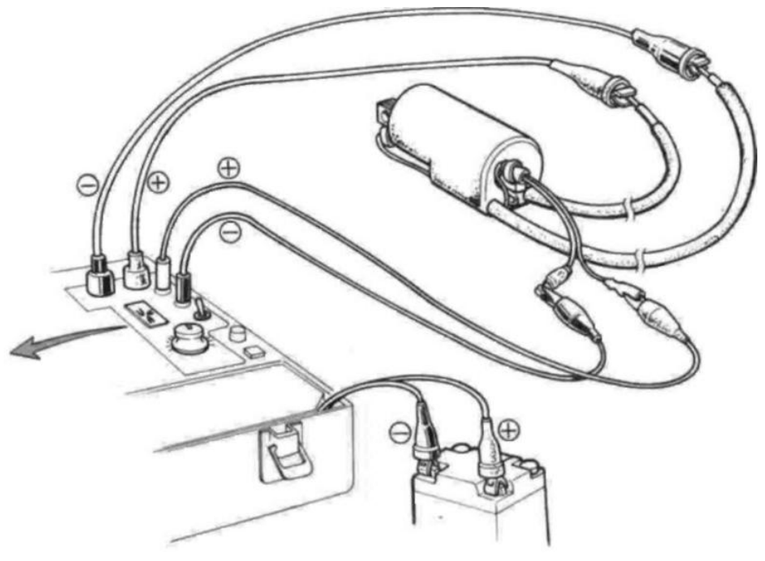
Remove the seat.
Remove the fuel tank.
Disconnect the wire.
Remove the coil.



• IGNITION COIL INSPECTION

3-point spark test. The coil is satisfactory if the spark jumps across the gap greater than **6** mm **(0.24 in.).**





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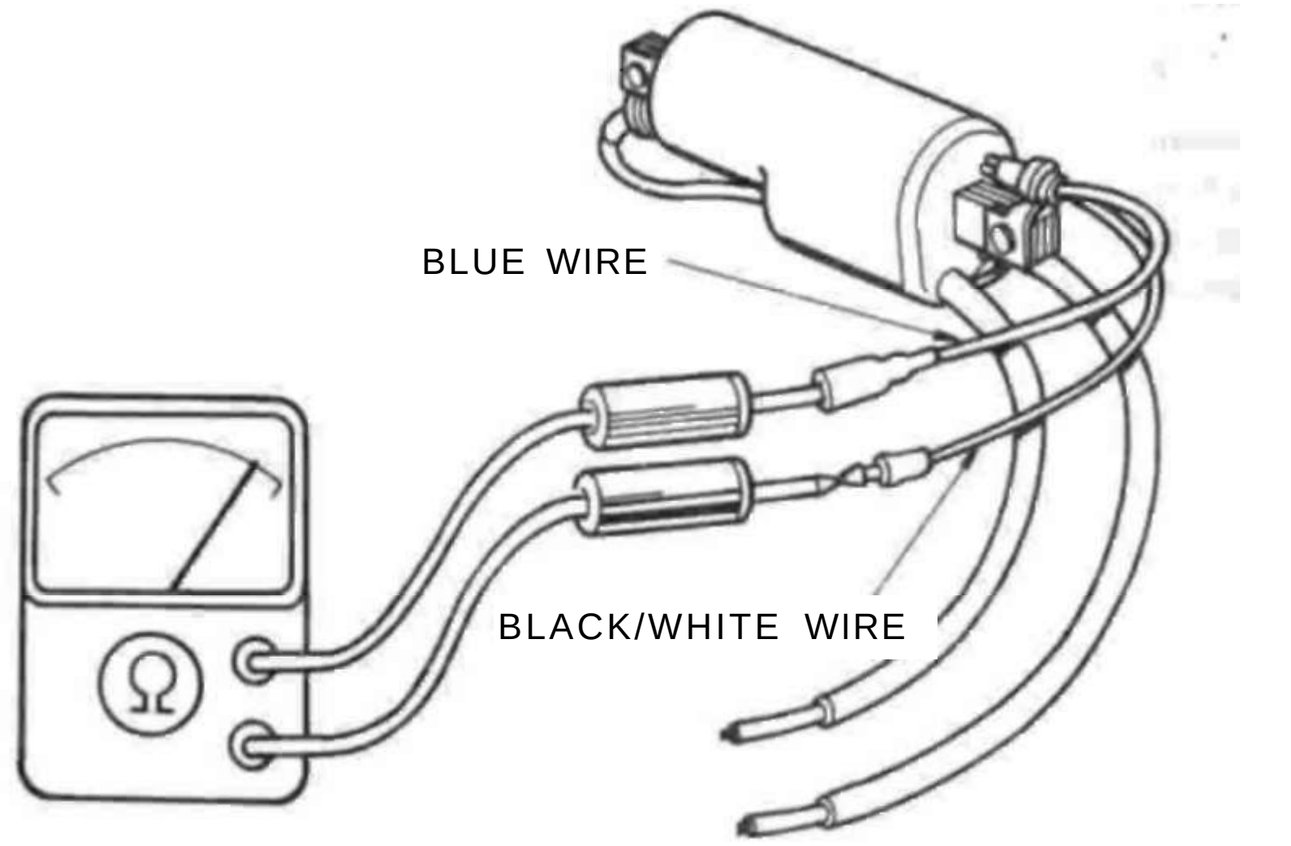
IGNITION COIL CONTINUITY TEST

NOTE

Before performing the coil test, remove spark plug caps.

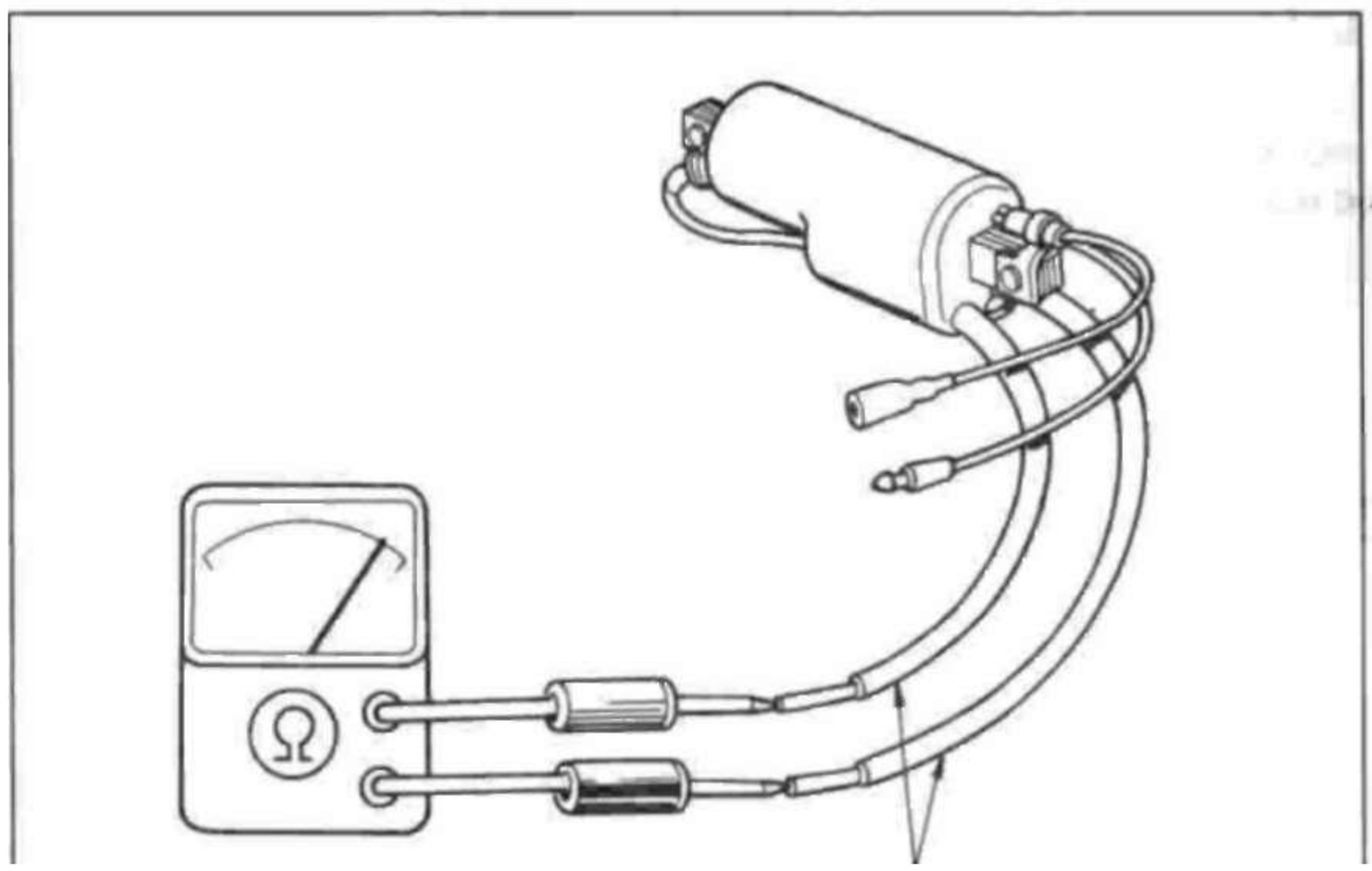
- PRIMARY COIL CONTINUITY TEST

There should be continuity between blue and black/white wires.



- SECONDARY COIL CONTINUITY TEST

There should be continuity between secondary wires.

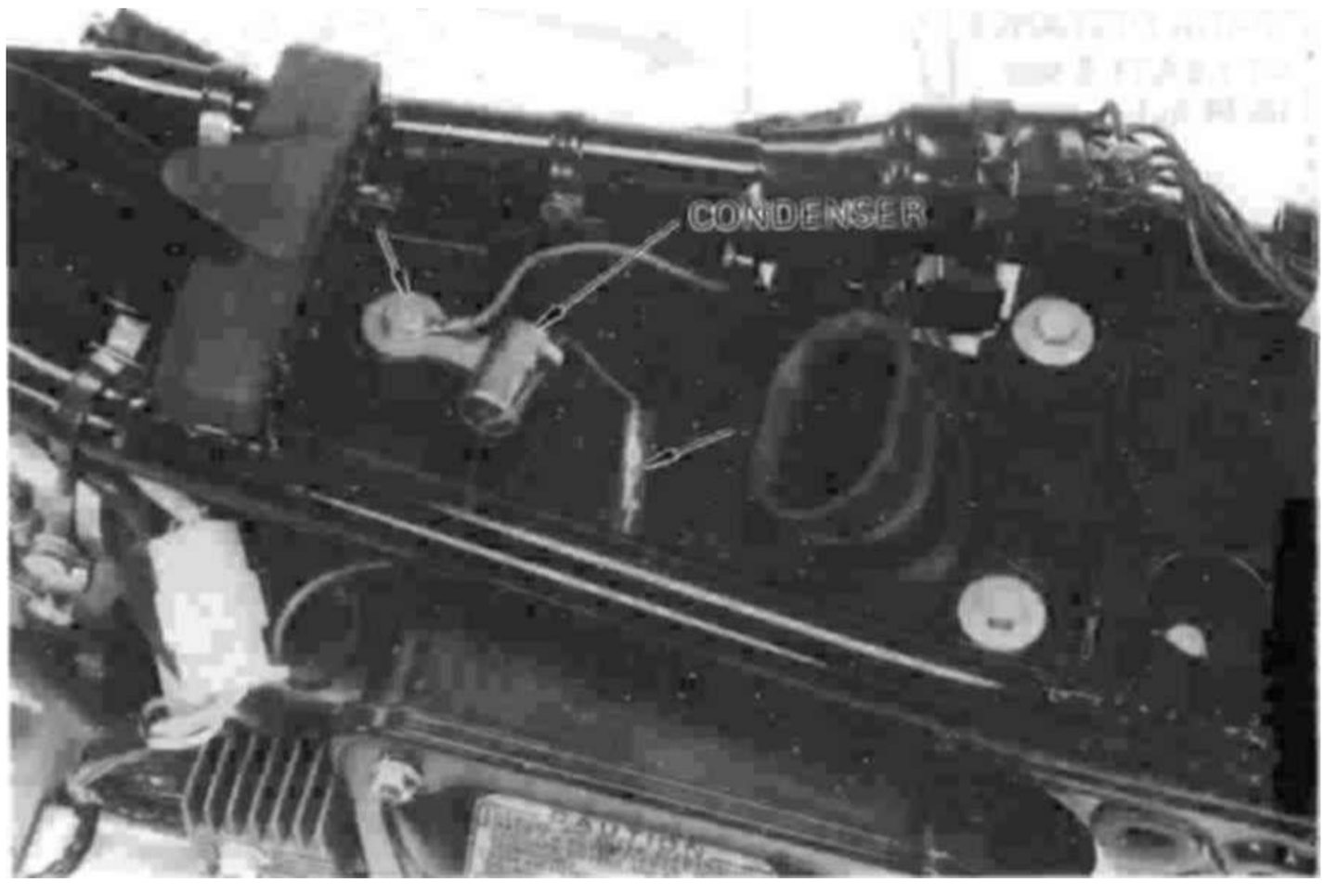


CONDENSER

- CONDENSER REMOVAL

Remove the seat.
Disconnect the condenser wire from the connector.
Remove the condenser.

Condenser may be located under the gas tank on right side of bike.



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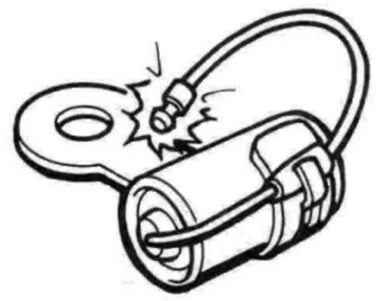
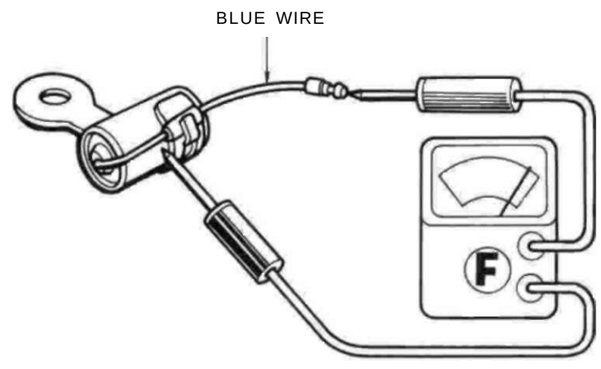
• CONDENSER INSPECTION

Measure the capacity after shorting the condenser.



SHORTING THE CONDENSER

Measure the condenser capacity.



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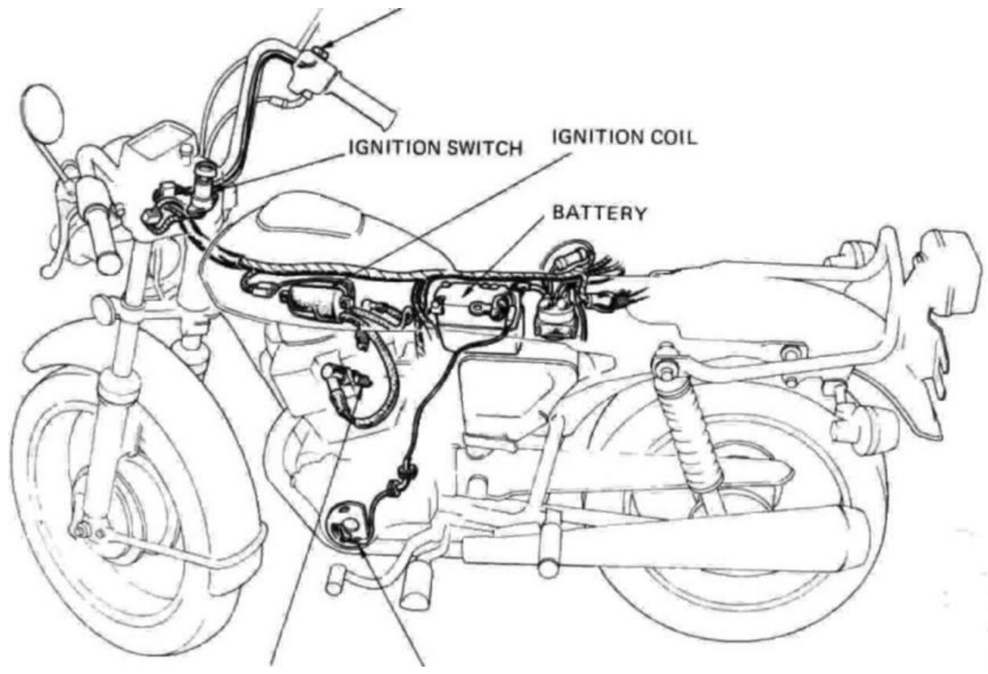
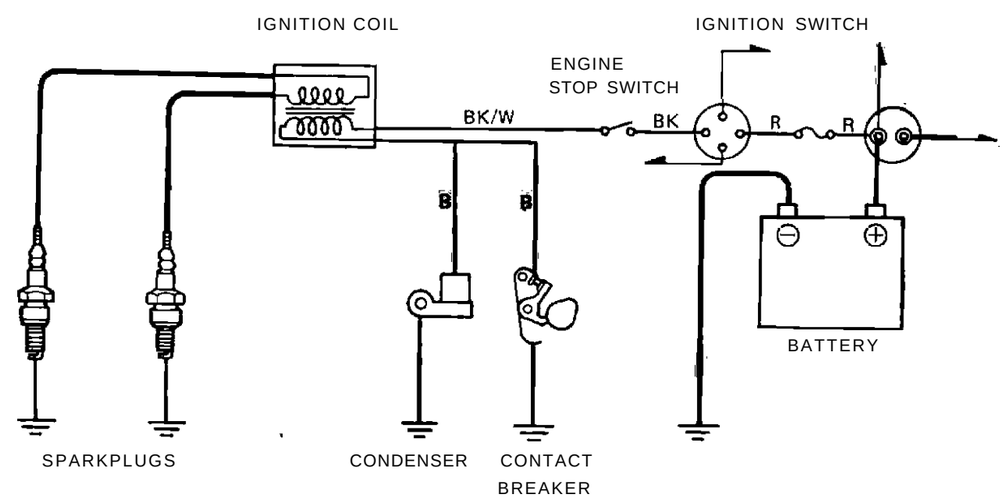
IGNITION SYSTEM

ENGINE STOP SWITCH





W- WHITE
BK- BLACK
B- BLUE
R- RED

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SERVICE INFORMATION

- **WORKING PRACTICE**

This section describes servicing of the starter motor.

Starter motor removal: Refer to section 9.
Starter clutch removal: Refer to section 9.

While servicing the starter motor, the main switch must be kept "OFF".

SPECIFICATIONS

Starter Motor

Type:	6V gear-reduction electric motor		
Drive:	Chain to crank shaft		
Rated Output:	0.25 kw		
Reduction ratio:	6.44		
		Load	Locked
Voltage		4.2V	2.8V
Amperage		120A	Max. 300A
Torque (minimum, sprocket shaft)		Min. 0.55 kg-m	1.5 kg-m
RPM (minimum, sprocket shaft)		Min. 400 rpm	
Brush length:	12.2-12.4 mm (0.4803-04882 in.)		
Service limit:	7.0 mm (0.2756 in.)		

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TROUBLESHOOTING

Starter Motor Will Not Turn
1. Dead battery
2. Faulty ignition switch
3. Faulty start switch
4. Faulty neutral switch
5. Faulty starter relay
6. Loose or disconnected wire or cable
7. Neutral diode open

Starter Motor Turns Engine Slowly
1. Low battery
2. Excessive resistance in circuit
3. Binding in starter motor, drive chain, or drive system

Starter Motor Turns, But Engine Does Not Turn
Failure **in:**
1. Drive chain or sprockets
2. Drive shaft or starter clutch
3. Starter motor planetary gears
4. A.C.Generator drive gears

Starter Motor and Engine Turn, But Engine Does Not Start
1. Ignition circuit problems
2. Engine problems

Engine Kicks Back on Starting
1. Improper ignition timing

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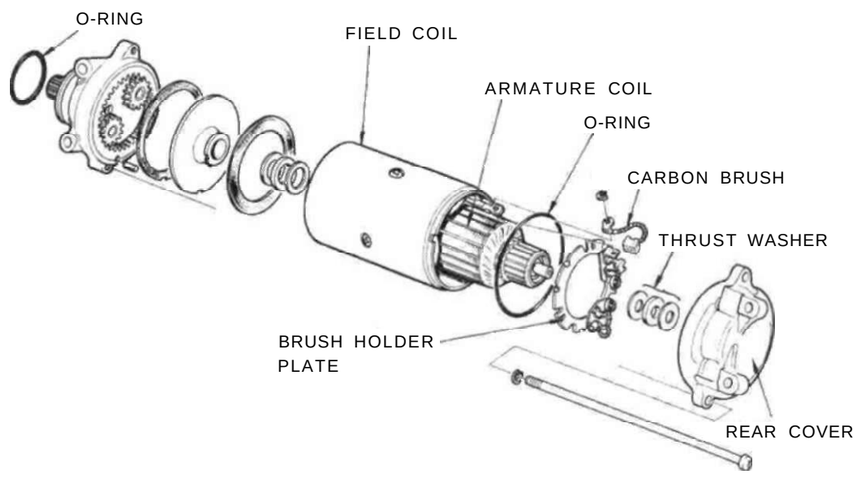
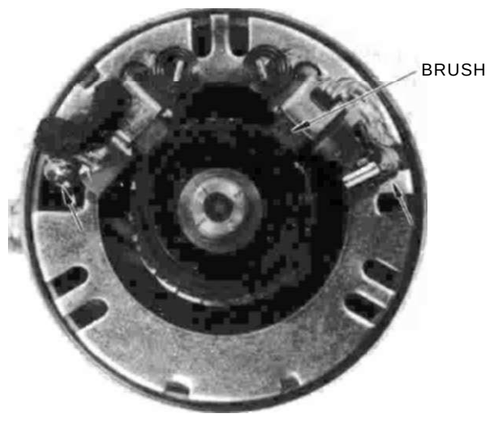
STARTING MOTOR



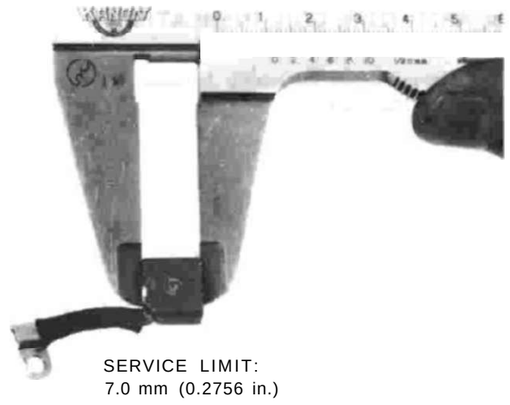
• CARBON BRUSH REMOVAL

Remove the starter motor case screws and the rear cover.
Loosen the brush terminal screws.
Remove the brushes from the holder plate.



• BRUSH INSPECTION

Measure the carbon brush length.



SERVICE LIMIT:
7.0 mm (0.2756 in.)

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• COMMUTATOR INSPECTION

Remove the brush holder and pull the commutator out.

Inspect the commutator bars for discoloration. If two or more bars are discolored, replace the commutator.

NOTE

Do not use emery or sand paper on the commutator.

• ARMATURE COIL CONTINUITY TEST

There should be continuity between the separate commutators.

• ARMATURE COIL INSULATION TEST

There may be no continuity between commutators and the shaft.

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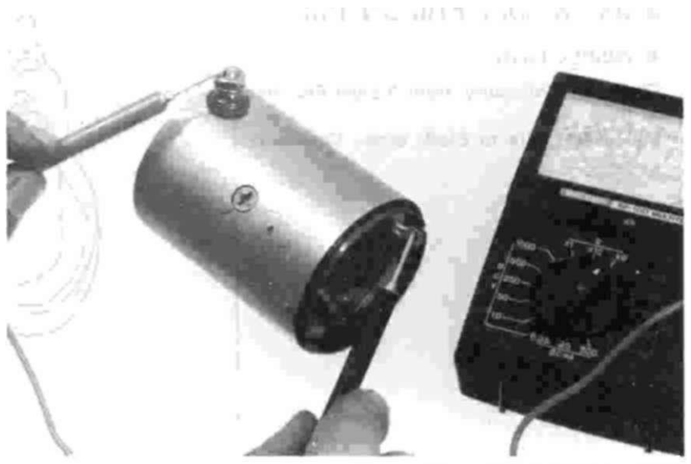
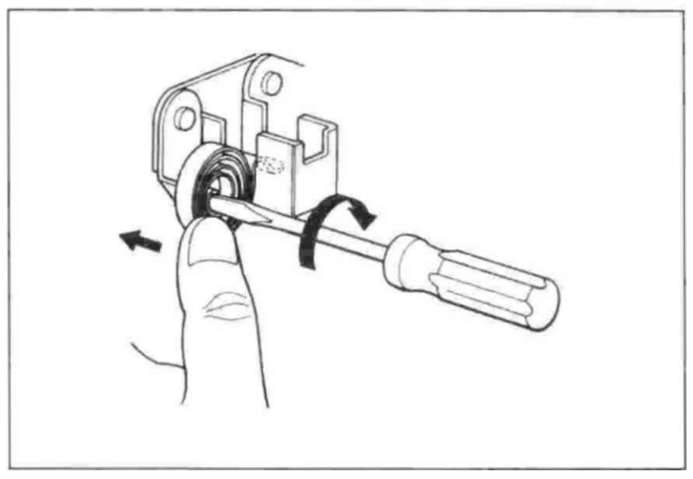
• FIELD COIL INSPECTION

Check for continuity from the cable terminal to the motor case and from the cable terminal to the brush wire.
Cable terminal to motor case: No continuity
Cable terminal to brush wire: Continuity



• BRUSH SPRING INSTALLATION

Attach the spi ing edge into the groove of brush holder, insert the driver into the inside of spring and coil it up fully.
Install the spring on the brush holder plate by finger pressure, as shown.



Install the rear cover and align the index marks on the case and rear cover.
Tighten the stator cover bolts.

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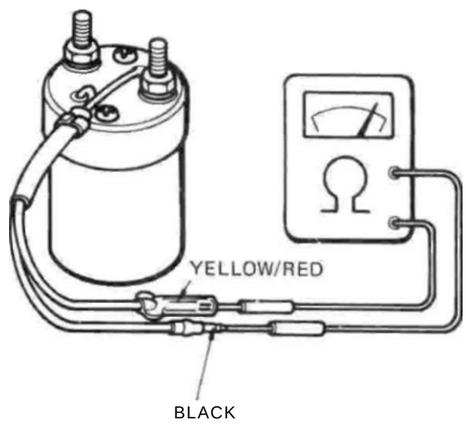
STARTER MAGNETIC SWITCH

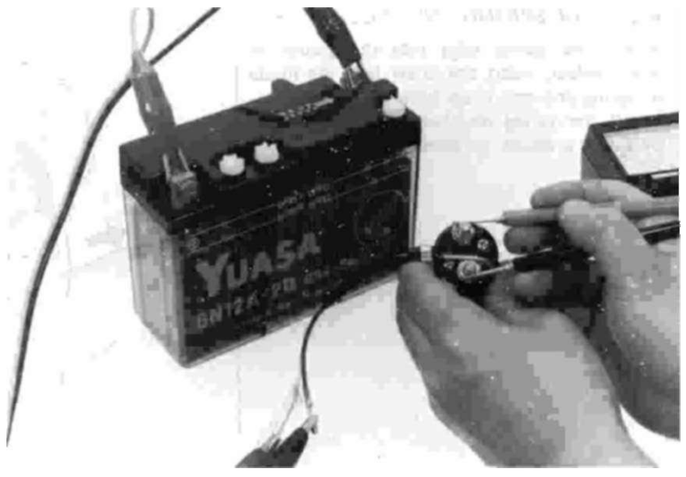
• INSPECTION

Check for continuity from Yellow/Red wire to Black wire.
Yellow/Red wire to Black wire: Continuity



• SWITCH OPERATION TEST

Connect 6-vo't source across primary leads and check for continuity between terminals. There should be continuity between the terminals.



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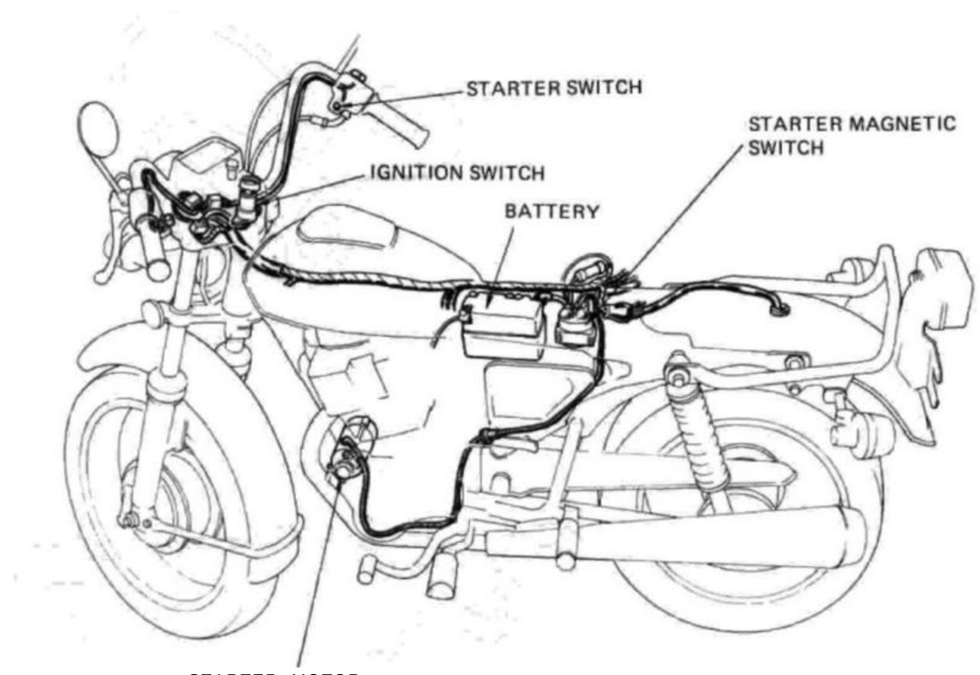

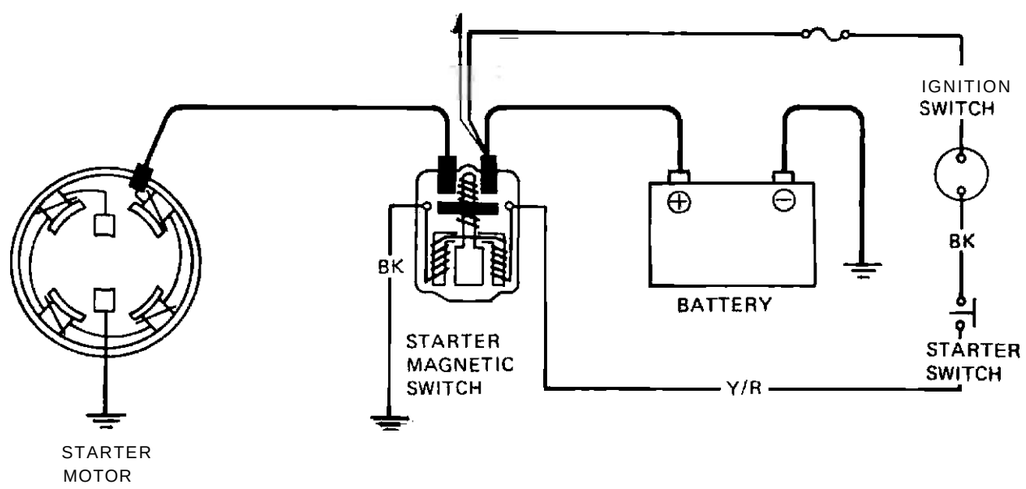

BK— BLACK
R- RED
Y— YELLOW

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SERVICE INFORMATION

- **WORKING PRACTICE**

All electrical wires and connectors are color-coded. When two or more different colored wires are connected, a colored tube that matches the major color of the other wire appears on the wire near the connector. Observe the color codes before disconnecting any wires.

All plastic plugs have locking tabs that must be released before disconnecting, and must be aligned when reconnecting.

In order to isolate an electrical failure, check the continuity of the electrical path through the part. A continuity check can usually be made without removing the part from the motorcycle — by simply disconnecting the wires and connecting a continuity tester or volt-ohmmeter to the terminals or connections.

A continuity tester is useful when checking to find out whether or not there is an electrical connection between the two points. If the quality of the circuit is important, as when there is a specific coil resistance involved, or when checking for high resistance caused by corroded connections, an ohmmeter is needed. Many ohmmeters also have voltmeter circuits built into the same case.

- **SPECIFICATIONS**

Bulbs	(6V)	
	Headlight-	25/35W
	Tail/stoplight:	3/32 cp
	Turn signal light:	21 cp
	Meter lights:	2 cp
	Neutral indicator.	2 cp
	Turn signal indicator:	1 cp
	High beam indicator:	1 cp

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TROUBLESHOOTING

General Principle:
if a Light Does Not Come on When Its Switch Is Operated, One of the Following Is True
1. Bulb faulty or burned out
2. Faulty switch
3. Wiring to that component has open circuit
4. Fuse blown

No Lights Come on When Ignition Switch Is Turned ON
1. Battery dead or disconnected
2. Ignition switch disconnected from harness
3. Faulty ignition switch
4. Faulty main fuse (20 amp)
5. Wiring faulty, loose, or broken

All Lights Come on, but Dimly, When Ignition Switch Is Turned ON
1. Battery low
2. Wiring or switch has excessive resistance

Headlight Beams Do Not Shift When HI-LO Switch Is Operated
1. Beam filament burned out
2. Faulty dimmer switch
3. Faulty starter button in free position

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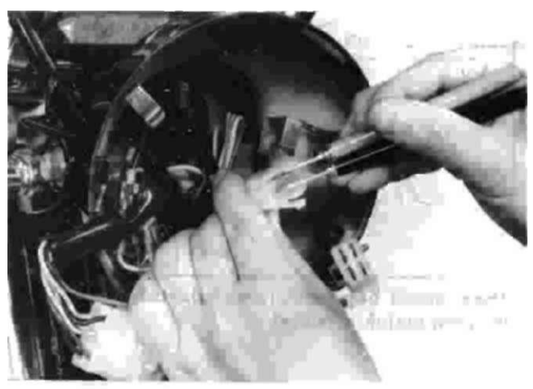
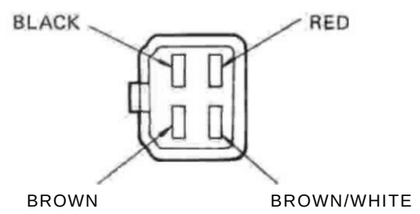
IGNITION SWITCH

Remove the headlight and disconnect the headlight switch coupler {white coupler).

SWITCH POSITION \ WIRE COLOR	RED	BLACK	BROWN/ WHITE	BROWN
OFF				
	○	○	○	○
P	○			○

There should be continuity as indicated by 0 - 0 in the table.



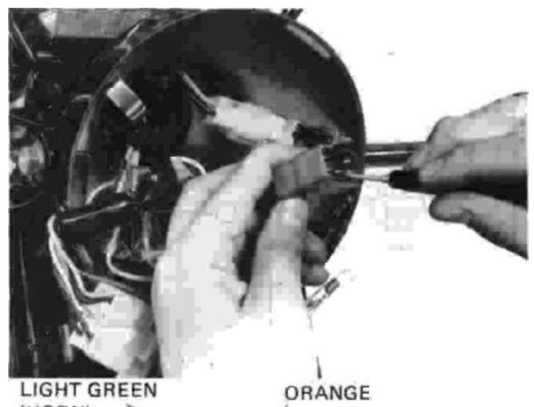


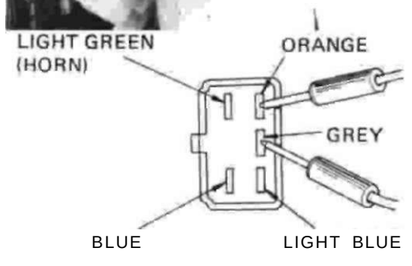
TURN SIGNAL SWITCH

Disconnect the winker switch coupler (red coupler).

SWITCH POSITION \ WIRE COLOR	GREY	ORANGE	LIGHT BLUE
L	○	○	
R	○		○

There should be continuity as indicated by 0 - 0 in the table.





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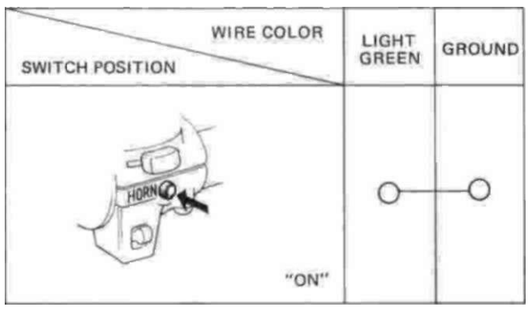
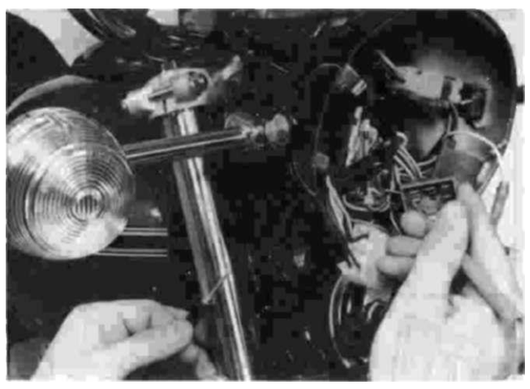
HORN SWITCH

Disconnect the horn switch coupler (red coupler).

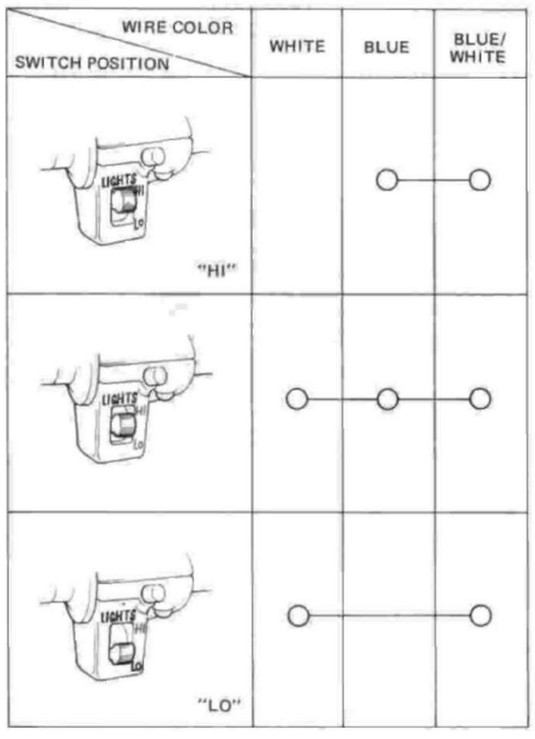


There should be continuity as indicated by 0—0 when the horn button is pushed.

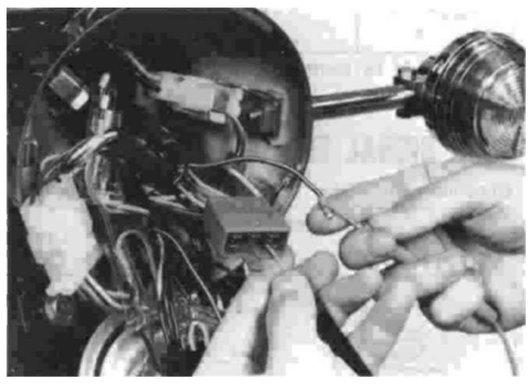


DIMMER SWITCH

Disconnect the dimmer switch coupler (red coupler) and wire connectors (blue/white wire and white wire).



There should be continuity as indicated by 0 - 0 in the table.



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STARTER SWITCH

Disconnect the black coupler.

SWITCH POSITION \ WIRE COLOR	BLACK	BLUE/ BLACK	YELLOW RED
	○		○
	○	○	

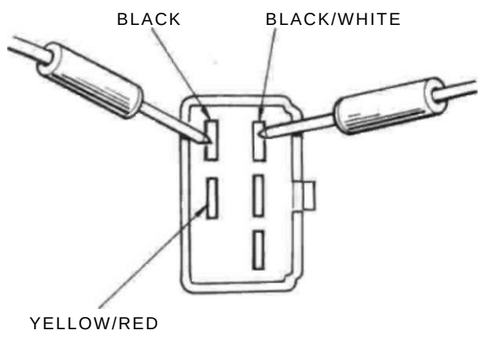
There should be continuity as indicated by 0—0 in the table.

ENGINE STOP SWITCH

Disconnect the engine stop switch coupler (black coupler).

SWITCH POSITION \ WIRE COLOR	BLACK	BLACK/ WHITE
OFF RUN **OFF**		
OFF **RUN** OFF	○ ○	

There should be continuity as indicated by 0—0 in the table.



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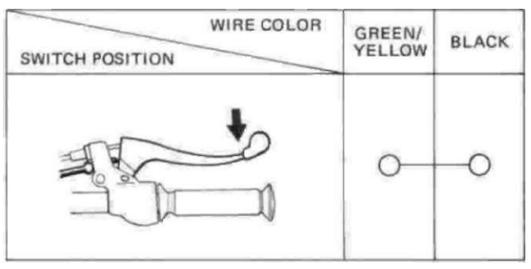
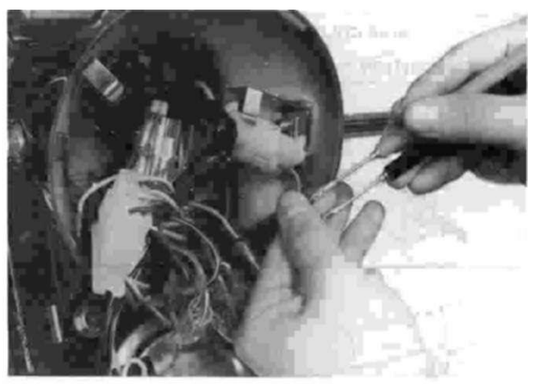
FRONT STOP LIGHT SWITCH

Disconnect the green/yellow wire and black wire.

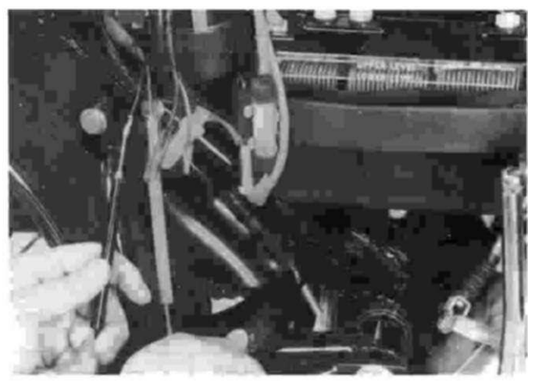


There should be continuity when the lever is pulled.



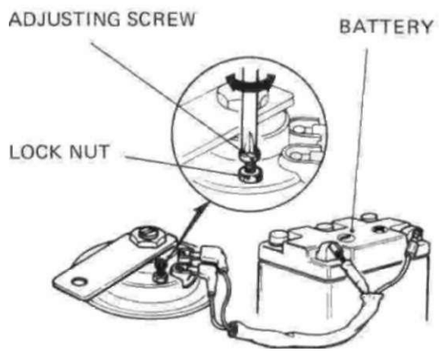
REAR STOP LIGHT SWITCH

Operate the switch to check for continuity.
There should be continuity with the brake lever is pulled.



HORN

Test the horn sound by applying 6 volt battery directly. If sound is small, adjust the horn sound by turning the adjusting screw.



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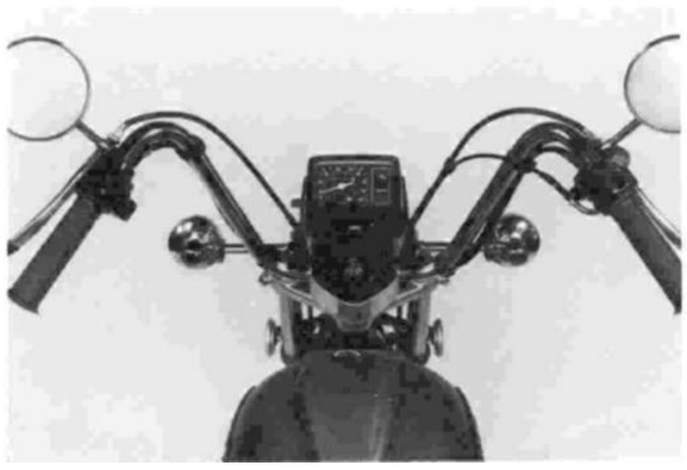

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18. TROUBLESHOOTING CHART

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ENGINE WILL NOT START OR IS HARD TO START

		Possible Cause:
1. Check if fuel reaches carburetor	FUEL DOES NOT REACH CARBURETOR →	(1) Empty fuel tank (2) Clogged fuel line between fuel tank & carburetor (3) Clogged fuel valve (4) Clogged fuel tank cap breather hole
FUEL REACHES CARBURETOR ↓		
2. Remove spark plug & test spark	WEAK OR NO SPARK →	(1) Faulty or fouled plug (2) Fouled, burnt or pitted contact breaker points (3) Incorrect breaker point gap (4) Faulty condenser (5) Broken or shorted high tension cordfi) (6) Open or shorted ignition coil (7) Faulty ignition switch (8) Incorrect ignition timing
GOOD SPARK ↓		
3. Test cylinder compression	LOW COMPRESSION →	(1) Engine not cranked (2) No valve clearance (3) Valve stuck open (4) Worn cylinder & piston rings (5) Blown cylinder head gasket (6) Flaw in cylinder head (7) Incorrect valve timing
NORMAL COMPRESSION ↓		
4. Start engine	ENGINE FIRES, BUT DOES NOT START →	(1) Choke valve open (2) Carburetor pilot screw open (3) Air leaking through intake manifold (4) Incorrect ignition timing
ENGINE FIRES ↓		
5. Remove spark plug	WET PLUG →	(1) Flooded carburetor (2) Choke valve closed
DRY PLUG ↓		
6. Start engine with choke closed		

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TROUBLESHOOTING CHART

ENGINE LACKS POWER

		Possible Cause:
1. Raise wheels off ground & spin WHEELS SPIN FREELY	WHEELS DO NOT SPIN FREELY →	(1) Dragging brake (2) Faulty wheel bearing (3) Overtightened drive chain
2. Check tire pressure NORMAL PRESSURE	INCORRECT TIRE PRESSURE →	(1) Punctured tire (2) Faulty tira valve
3. Rapidly accelerate from low to second ACCELERATES	DOES NOT ACCELERATE WITH ENGINE SPEED RAISED →	(1) Slipping clutch (2) Worn or uneven clutch facings
4. Rev up gradually ENGINE SPEED INCREASES	ENGINE SPEED DOES NOT INCREASE →	(1) Carburetor choke closed (2) Clogged air cleaner (3) Clogged fuel line (4) Clogged fuel tank cap breather hole (5) Clogged muffler
5. Check ignition timing CORRECT TIMING	INCORRECT TIMING →	(1) Incorrect ignition timing (2) Ignition malfunction
6. Check valve clearance CORRECT VALVE CLEARANCE	INCORRECT VALVE CLEARANCE →	(1) Incorrect valve clearance (2) Worn valve seat
7. Test cylinder compression NORMAL COMPRESSION	LOSS OF COMPRESSION →	(1) Valve stuck open (2) Worn cylinder & piston rings (3) Blown cylinder head gasket (4) Incorrect valve timing
8. Check carburetor for clogging CARBURETOR NOT CLOGGED	CARBURETOR CLOGGED →	(1) Carburetor jets clogged
9. Remove spark plug PLUG NOT FOULED OR DISCOLORED	PLUG FOULED OR DISCOLORED →	(1) Fouled plug (2) Incorrect heat range plug

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10. Check oil level and condition

OIL DIRTY OR LEVEL INCORRECT → (1) Level too low or high (2) Contaminated oil

CORRECT ENGINE OIL LEVEL

11. Remove cylinder head cover and check lubrication

INSUFFICIENTLY LUBRICATED → (1) Clogged oil passage (2) Poor oil pump delivery (3) Low oil pressure

SUFFICIENTLY LUBRICATED

12. Check if engine overheats

ENGINE OVERHEATS → (1) Excessive carbon in combustion chamber (2) Incorrect fuel (3) Slipping clutch (4) Mixture too lean

ENGINE DOES NOT OVERHEAT

13. Rapidly accelerate or run at high speeds

ENGINE KNOCKS → (1) Worn piston or cylinder (2) Mixture too lean (3) Incorrect fuel (4) Excessive carbon in combustion chamber (5) Ignition timing too early

ENGINE DOES NOT KNOCK

POOR PERFORMANCE AT IDLE AND LOW SPEED

Possible Cause:

1. Check ignition timing & valve clearance

INCORRECT TIMING & CLEARANCE → (1) Incorrect timing adjustment (2) Ificorrect valve clearance

CORRECT TIMING & CLEARANCE

2. Check carburetor pilot screw adjustment

INCORRECTLY ADJUSTED → (1) Mixture too lean (2) Mixture too rich

CORRECTLY ADJUSTED

3. Check for air leaks

AIR LEAKS → (1) Faulty carburetor packing (2) Carburetor not securely tightened (3) Faulty intake pipe gasket (4) Deteriorated O-ring

NO AIR LEAKS

4. Remove spark plug & test spark

WEAK OR INTERMITTENT SPARK → (1) Faulty or fouled plug (2) Fouled, rough, or pitted breaker point surface (3) Condenser shorted

GOOD SPARK

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POOR HIGH SPEED PERFORMANCE

		Possible Cause:
1. Check ignition timing & valve clearance	INCORRECT TIMING & CLEARANCE →	(1) Incorrect timing adjustment (2) Incorrect valve clearance
CORRECT TIMING & CLEARANCE ↓		
2. Disconnect fuel tube at carburetor and check for clogging	RESTRICTED FUEL FLOW →	(1) Empty fuel tank (2) Clogged fuel tube (3) Clogged fuel tank cap breather hole
UNRESTRICTED FUEL FLOW ↓		
3. Check fuel filter, fuel valve, & carburetor jet for clogging	CLOGGED →	(1) Clogged jet (2) Clogged fuel filter (3) Clogged fuel valve
NOT CLOGGED ↓		
4. Replace carburetor main jet	CONDITION AGGRAVATED →	(1) Jet size too small (2) If condition improved with small jet: a) Clogged air cleaner b) Choke not opened fully
CONDITION IMPROVED ↓		
5. Check valve timing	INCORRECT →	(1) Incorrect valve timing adjustment
CORRECT ↓		
6. Check valve spring tension	WORN OR BROKEN SPRING →	(1) Faulty valve spring
SPRING TENSION CORRECT		

SMOKING EXHAUST

		Possible Cause:
1. Run motorcycle a long distance at high speed	BLACK SMOKE EMITTED →	(1) Worn cylinder & piston rings (2) Oil level too high (3) Piston rings incorrectly installed (4) Faulty piston or cylinder (5) Flaws in cylinder head
THIN EXHAUST EMITTED ↓		
2. Return throttle grip quickly	WHITE SMOKE EMITTED →	(1) Worn intake valve guide or stem (2) Deteriorated valve guide O-ring

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NO WHITE SMOKE EMITTED

3. Run motorcycle a long distance at low speed

UNCOLORED EXHAUST

WHITE SMOKE EMITTED → (1) Worn exhaust valve guide & stem
(2) Exhaust valve guide incorrectly seated
(3) Worn exhaust valve stem seal

FAULTY CLUTCH

		Possible Cause:
1. Properly adjust clutch	CLUTCH SLIPPING →	(1) Weak clutch spring (2) Worn or distorted clutch plate or friction disc
2. With clutch disengaged, rev up engine in first gear	MOTORCYCLE TENDS TO CREEP WITH CLUTCH DISENGAGED →	(1) Distorted clutch plate or friction disc (2) Uneven clutch spring tension

DIFFICULT SHIFTING

	Possible Cause:
DIFFICULT SHIFTING →	(1) Broken gear shift arm spring (2) Broken shift fork (3) Sluggish movement of shift drum & fork (4) Broken shifting gear protrusion (5) Shift fork pawl disconnected from shift drum
PEDAL NOT RETURNED TO NEUTRAL →	(1) Broken shift spindle return spring (2) Shift spindle interferring with case or cover
GEARS JUMPING OUT OF POSITION →	(1) Bent shifting gear or worn shift fork (2) Broken or weakened shift drum stopper spring

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ENGINE NOISE

	Possible Cause:
TAPPET NOISE →	(1) Excessive valve clearance (2) Worn tappet
PISTON SLAP →	(1) Worn piston & cylinder (2) Excessive carbon in combustion chamber (3) Worn piston pin & connecting rod small end
CAM CHAIN NOISE →	(1) Worn camshaft bearing & journal (2) Worn camshaft sprocket teeth (3) Excessively elongated drive chain
CLUTCH CHATTER →	(1) Excessive clearance between clutch plate & cover
NOISY DRIVE & DRIVEN GEARS →	(1) Worn or deteriorated driven gear damper (2) Worn gear teeth

MOTORCYCLE PULLS TO ONE SIDE

	Possible Cause:
DIFFICULT STEERING IN BOTH DIRECTIONS →	(1) Overtightened steering head top thread nut (2) Broken steering steel balls (3) Bent steering stem
WHEEL WOBBLES →	(1) Excessive play in wheel bearing (2) Distorted wheel rim (3) Loose spokes (4) Excessive play in rear fork pivot bushing (5) Twisted frame (6) Drive chain adjuster unequally adjuster
MOTORCYCLE PULLS TO ONE SIDE →	(1) Unbalanced front & rear shock absorbers (2) Front & rear wheels not aligned (3) Bent front or rear fork

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FAULTY FRONT & REAR SHOCK ABSORBERS

	Possible Cause:
SOFT RIDE →	(1) Weakened spring (2) Excessive load (3) Lack of front fork oil (4) Faulty rear shock absorber
HARD RIDE →	(1) Front fork oil level too high (2) Faulty front fork (3) Faulty rear shock absorber
NOISE IN SHOCK ABSORBER →	(1) Faulty stopper rubber (2) No oil in shock absorber (3) Faulty rear shock absorber

FAULTY BRAKE

	Possible Cause:
INEFFECTIVE ADJUSTER →	(1) Worn brake lining, brake shoe cam or brake cam
SQUEAKING →	(1) Worn brake lining (2) Foreign particles on brake lining (3) Rough brake drum shoe contacting face (4) Worn brake panel bushing
INEFFECTIVE BRAKE →	(1) Faulty front brake cable (2) Brake shoe partially contacted (3) Mud or water in brake (4) Oil or grease on brake lining (5) Worn brake lining

ELONGATED DRIVE CHAIN

Possible Cause:

(1) Incorrect adjustments
(2) Not lubricated sufficiently enough
(3) Worn sprocket

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